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**ON THE COVER:** The Ultimate Summer Camp Jeep went from pile of parts to hill-killer in three short months and came home from the UA with plenty of mud on the paint. Meanwhile Brennan Metcalf, our chosen returning reader, brought his little flattie along on the wettest wheeling trip ever.





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## FRIENDS WITH WRENCHES

BY 4xFredWilliams

**I** LOVE PROJECT TRUCKS, AND I HATE project trucks. I hate them because I always give myself some crazy deadline and the week before the deadline I'm killing myself to get the darn thing done. This is true even if I set the deadline 35 years away so I will have "plenty of time." This results in plenty of time not getting it done until the week before it needs to hit the trail.

I love project trucks because it's so much fun to build something, but I've noticed that recently I am building more and more stuff with the help of friends, shops, and anyone else I can wrangle into the mix. I am no doubt a bad friend because I always have something heavy that needs loaded, or some bolt that requires two people to tighten, or some other problem that I can't complete without assistance. I guess I could really use an assistant, but I have no budget for that, no time to wait for babies to grow up and help, and no knowledge of how to train my two dogs to hold the wrench inside the cab while I tighten the nut underneath the cab.

The other day I spent 25 minutes trying to remove a pedal from the firewall of a truck because I had to wedge the wrench inside on the bolt head then climb underneath to loosen the nut, only to hear the wrench fall off the bolt head after a quarter-turn. And you wonder why I throw tools out of frustration. Actually, I don't throw tools out of frustration because it would just make me even more frustrated if I had to walk around the yard looking for the wrench I just threw out there in frustration.

My friend Perry told me a funny story about how he was on a construction job with his brother. Out of frustration at who knows what, Perry took his hammer and threw it at the ground. The hammer hit a board, bounced up in the air, and whacked his brother right in the forehead. As the blood ran down his forehead he gave Perry such a look of disgust that from then on Perry never threw a tool out of frustration again. I have three brothers and so I took that story to heart and gave up throwing tools myself. So should you.

But back to project vehicles. One of my favorite parts of any project truck is working with a shop to build something cool. There are many reasons to do this. It promotes the shop, it helps me get the project done, and it usually means a professional is working on the project, not just a magazine guy who loves 4x4s. What's more, I get to learn cool truck-building tricks from these guys who do it daily, and bring some of those tricks to you via the articles about the project. Plus on many occasions I've cross-pollinated ideas from one shop to another in ways that helped everyone, such as welding old spring U-bolts together as caliper hooks when working on a front end, or using a big welding clamp on a drill press base to keep a piece of metal from spinning around while drilling a hole. But the real reason is that it's fun to build stuff with other people.

On those late nights when it's down to the wire and we were trying to get this year's Ultimate Summer Camp Jeep done for the Ultimate Adventure, I recall the silly tired antics with the crew from Synergy Manufacturing more than anything else. Guys trying to wire stuff and weld stuff and all the while laughing about who knows what because we were so exhausted. Strange inside jokes and weird sing-alongs with the radio are not unusual when it's after midnight and a 4x4 needs to be finished. Those are the best parts of building project trucks and why I'm always looking for friends and shops to build stuff with. Because it's fun. 🛞



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## HOT SHOT



### EL TRUCKO

**VEHICLE:** 2003 Ford Ranger FX4 **OWNER:** Doug Sanborn, Colorado Springs, CO **TIRES & WHEELS:** 33x12.5R15 Wild Country RVTs on garage sale wheels **SUSPENSION:** 3-inch body lift, 2-inch suspension lift **DRIVETRAIN:** Stock, 4.10 gears **PERFORMANCE MODS:** K&N intake **OTHER DOODADS:** Homebuilt front skidplate, Badlands 9,000-pound winch **DOES EVERYTHING WORK THE WAY YOU WANT?:** No. I'm looking for a manual transfer case out of a Level 2 FX4 **FUNNIEST WHEELING INCIDENT:** Well, this photo is pretty good. We were doing some wheeling up off of Old Stage in Colorado. We kept breaking through the hardpack or sliding off the trail. It took about an hour and a half to go 200 meters. There's nothing quite like winter wheeling. **ANYTHING YOU WOULD CHANGE?:** By the time this is printed it will be sitting on coilovers instead of torsion bars. **ANYTHING TO ADD?:** This generation of Ranger is much under-rated, I wish there was more aftermarket support. I really appreciate all of the little shops that put in the effort to make parts for these trucks.



### SUPER SILVERADO

**VEHICLE:** 1997 Chevy Silverado Z71 **OWNER:** Ben Sostre, Montville, CT **TIRES & WHEELS:** 35x12.5R15s on 15x10 Pro Comp simulated beadlocks **SUSPENSION:** SAS, Alcan 8-inch rear leafs, homemade shock hoops, Rancho shocks **DRIVETRAIN:** 4L60E with Corvette servos and shift kit, 1988 Dana 60 front axle, Mile Marker hubs, 14-bolt rear axle, disc-brake conversion, Detroit Locker, 4.10 gears **PERFORMANCE MODS:** 5.7L V-8 with 7-psi Whipple supercharger, K&N intake, MSD ignition, custom exhaust with Flowmaster mufflers and tips **OTHER DOODADS:** Blue Torch high-steer kit, homemade front bumper with Warn winch plate, Rhino-lined, 12K winch, 7-inch HID fogs, LED blinkers, Bushwacker flares **ANYTHING YOU WOULD CHANGE?:** Cumming 6BT, 5-speed, front spool, cage **FUNNIEST WHEELING INCIDENT:** Getting stuck on flat ground because my front driveshaft wasn't installed **ANYTHING TO ADD?:** I would like to thank my wonderful girlfriend, Justine, for dealing with me working on my truck all hours of the night on those "10-minute" jobs



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## "HENRY"

**VEHICLE:** 1992 Ford F-350 **OWNER:** Fred Day, Glen Allen, VA **TIRES & WHEELS:** 42-inch Super Swamper TLSs on 12x16.5 American Racing Outlaws **SUSPENSION:** 6-inch Sky-jacker system **DRIVETRAIN:** C-6 automatic, BW1356 transfer case, Sterling 10¼ front axle, Dana 60 rear axle **PERFORMANCE MODS:** Warmed-over 460 V-8 **OTHER DOODADS:** Omaha Service body, front and rear 12,000-pound Badlands winches, Cobra CB, Rustoleum Bed Liner, Optima Yellow-Top battery, grille and headlights off eBay **DOES EVERYTHING WORK THE WAY YOU WANT?:** Absolutely! **ANYTHING YOU WOULD CHANGE?:** 5.38s and 44s **FUNNIEST WHEELING INCIDENT:** While retrieving a deer, a buddy and I had to go down some washed-out logging trails that no one else would even try. It got pretty hairy a couple of times with mud and water coming in the bottom of the doors, but I made it in through. When we got back to camp he was telling everyone how we almost got stuck. I replied that if we had gotten stuck I would have just locked the hubs! **ANYTHING TO ADD?:** This has been a great truck and a great learning experience for me. I've kept everything low-buck, and everything has worked out. I would take this truck anywhere.

## DONOR-RECIPIENT

**VEHICLE:** 1985 Toyota pickup **OWNER:** Mike Gorenc, Dewey, AZ **TIRES & WHEELS:** 32x11.5R15 BFG All-Terrains on factory SR5 wheels **SUSPENSION:** Stock **DRIVETRAIN:** Stock **PERFORMANCE MODS:** 1992 22RE, 1985 22RE EFI **OTHER DOODADS:** 9,000-pound winch, KC Day-

lighters, SR5 power steering, wing windows, and bling conversion **DOES EVERYTHING WORK THE WAY YOU WANT?:** Yes, mostly **ANYTHING YOU WOULD CHANGE?:** Gears, lockers, and a turbo or Vortec 4.3L (I would have gone with the 4.3 if the right donor vehicle came along first) **FUNNIEST WHEELING INCIDENT:** Using my winch for the first time rescuing the owner of the towing company I work for **ANYTHING TO ADD?:** This truck started as a base model with a blown engine. It took six years and two donor trucks to finally get it running. Recycling the leftover metals helped keep this Cheap Truck Challenge-worthy.



## FAMILY WAGON

**VEHICLE:** 1998 Chevy Tahoe **OWNER:** Anthony Roy, Casper, WY **TIRES:** 33x12.5R18 Cooper Discoverer STTs **SUSPENSION:** 10-inch lift using SAS, 1980-something Chevy front springs, Suburban rear springs with add-a-leaf and shackle reversal, Bilstein 5100 shocks (10-inch travel front, 12-inch travel rear), custom front hoops **DRIVETRAIN:** 4L60E automatic transmission, NP205 manual-shift transfer case, Ford Dana 44 front axle, Dana 60 rear axle, 3.55 gears **PERFORMANCE MODS:** 5.7L V-8, flat top pistons, Ram Jet 350 cam, Black Bear-tuned ECM, 3-inch exhaust **OTHER DOODADS:** Custom crossover steering **DOES EVERYTHING WORK THE WAY YOU WANT?:** Pretty good so far **ANYTHING YOU WOULD CHANGE?:** It needs a track bar, dual stabilizers, winch/bumper, NV4500, 4.56 gears, rear locker, front limited-slip **ANYTHING TO ADD?:** Steering is pretty squirrely right now. Hoping the track bar and dual stabilizers will settle it out.



## ROAD KING

**VEHICLE:** 2000 Chevrolet Silverado **OWNER:** Vanessa Jean, Sterling, MI **TIRES & WHEELS:** 33-inch Interco TLSs on stock 16.5-inch steel wheels **SUSPENSION:** 4-inch lift—custom 3-link front suspension using Rusty's 2½-inch forged rod ends, 12-inch-travel Radflo emulsion coilovers **DRIVETRAIN:** 5.3L V-8, 4L60E, NP241, Ford high-pinion Dana 60 front axle, GM 14-bolt rear axle with disc brake conversion, 4.10 gears **DOES EVERYTHING WORK THE WAY YOU WANT?:** So far so good **ANYTHING YOU WOULD CHANGE?:** Too much to list, but NP203 to NP205 Doubler triple-sticked, 14-bolt steer axle, 4-linked rear with coilovers, full cage, and some 40s **FUNNIEST WHEELING INCIDENT:** When we ended up in quad trails and had to figure out a way to turn around **ANYTHING TO ADD?:** This thing is rusty, kind of a sleeper, and rides down the road like a dream





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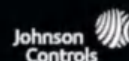
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## PRETTY TAHOE

**VEHICLE:** 2001 Chevy Tahoe **OWNER:** Jenna Hufford, Oxford, WI **TIRES & WHEELS:** 285/75R16 Kenda Klevers on 16x8 Model 7031 Pro Comp rims **SUSPENSION:** 3-inch coil spacers in rear with aftermarket torsion keys up front, 3-inch body lift **DRIVETRAIN:** Stock **PERFORMANCE MODS:** Stock 5.3L going strong! **OTHER DOODADS:** Aftermarket headlights with HID bulbs, LED bumper lights, billet grille, blacked-out taillights, GM tow mirrors **DOES EVERYTHING WORK THE WAY YOU WANT?:** Yes, steering has been great despite lift! **ANYTHING YOU WOULD CHANGE?:** Not a thing. I love my Tahoe. **FUNNIEST WHEELING INCIDENT:** Roads were completely white and couldn't see a thing, I drove it right over



a median and had it buried in a pile of plowed snow! **ANYTHING TO ADD?:** Thanks for showing off a lady's build!



## BIG BROWN

**VEHICLE:** 1991 GMC 3500 Crew Cab **OWNER:** Brian Blakeman, Sheridan, WY **TIRES:** 285/75R16 Toyo MT **SUSPENSION:** Homemade 5-inch front springs, 56-inch rear springs **DRIVETRAIN:** TBI 454, 4L80E trans, NP205 transfer case, Dana 60 front axle, 14-bolt rear axle with locker **PERFORMANCE MODS:** Built 1970 454, Edelbrock Performer RPM intake, bored 0.060 over, Keith Black flattop pistons, forged crank, Comp Extreme cam **OTHER DOODADS:** Custom bumpers and nerf bars, Warn 12,000-pound winch, bedlined the entire truck and interior **DOES EVERYTHING WORK THE WAY YOU WANT?:** Everything works great after a few trials and errors **FUNNIEST WHEELING INCIDENT:** My dad and I were hunting and broke a brake line and lost our brakes in no-man's land. By the time we got out we had broken both motor mounts, the trans mount, shroud, and right-side front shackles. My dad asked what we were going to do because we had no cell service and the truck was broken. I said, "We are going to drive home." That is what we did, although a little slower than usual. **ANYTHING TO ADD?:** Best hunting truck around

## SUBMISSION INFORMATION

Send us a picture of your ride if you've never done so. We keep a surplus of Readers' Rides submissions, but only one submission per person, and we love all off-road vehicles so send in your entries whether your rig is stock or not. Make sure each digital image is at least 1,600 by 1,200 pixels (or two megapixels) and saved as a TIFF, EPS, or maximum-quality JPEG file. **WRITE TO:** Readers' Rides, 4-Wheel & Off-Road, 831 S. Douglas St., El Segundo, CA 90245  
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- > **VEHICLE** (year, make, model)
- > **OWNER** (name, city, state)
- > **TIRES & WHEELS** (size, make, model)
- > **SUSPENSION** (lift, springs, shocks)
- > **DRIVETRAIN** (tranny, transfer case, axles)
- > **PERFORMANCE** (engine mods)
- > **OTHER MODS**
- > **DOES IT WORK THE WAY YOU WANT?**
- > **ANYTHING YOU WOULD CHANGE?**
- > **FUNNIEST WHEELING INCIDENT**
- > **ANYTHING TO ADD?**



## RAINER RIDGE RUNNER

**VEHICLE:** 1982 Toyota pickup **OWNER:** Bill Dotinga, Lynden, WA **TIRES & WHEELS:** 37x12.5 Interco Truxxus on 15x8 aluminum wheels **SUSPENSION:** 3-inch All-Pro leaf springs front, Chevy 1/2-ton rear leafs **DRIVETRAIN:** Vortec 4.3L V-6, 4-speed automatic transmission, 4.7 Toyota transfer case gears with twin-sticks, Toyota axles, ARB Air Lockers, 5.29 gears **PERFORMANCE MODS:** Headers, recalibrated ECM **OTHER DOODADS:** Custom bed, bumpers, and winch mount for Warn 9500 **DOES EVERYTHING WORK THE WAY YOU WANT?:** It works great on and off the road **ANYTHING YOU WOULD CHANGE?:** Hydro-assist steering, dual cases **FUNNIEST WHEELING INCIDENT:** When I flopped on my side. Several people came to my rig. I thought they were going to help me up, but instead they just took pictures. **ANYTHING TO ADD?:** Been 4-wheeling with the Rainer Ridge Rams for 14 great years. Made it to Rubicon and Moab.



## DAILY TJ

**VEHICLE:** 2004 Jeep TJ Rubicon **OWNER:** Joe Hopper, Madisonville, TN **TIRES & WHEELS:** 33x12.5R17 Mickey Thompson MTZs on LRG wheels **SUSPENSION:** 4-inch Pro Comp kit **DRIVETRAIN:** Stock **OTHER DOODADS:** Smittybilt bumpers and nerfs, Uniden CB **DOES EVERYTHING WORK THE WAY YOU WANT?:** Works perfect for a daily driver/weekend warrior **FUNNIEST WHEELING INCIDENT:** Having my old 4Runner buried to the frame at our local stomping grounds right at our campsite while everyone was grilling burgers and standing by the fire **ANYTHING YOU WOULD CHANGE?:** Different bumpers, winch, swingout tire rack **ANYTHING TO ADD?:** Being 30 minutes away from the old Upper Tellico OHV, its permanent closure is hard to stomach. Tread lightly! 🐾





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BY Drew Hardin

## 4-WHEELING BY REMOTE?

**E**ver wish you could get out of your 4x4 and spot yourself? The folks at Land Rover are testing a system in a Range Rover Sport that allows the driver—standing outside of the SUV—to control the steering, the accelerator, the brakes, and even the transfer case using a smartphone. There are limitations: Speed is governed to 4 mph, and the operator has to be within 10 meters of the vehicle. Get too far out of range and the truck will stop.

This R&D is part of Jaguar Land Rover's efforts towards autonomous driving. The company has also enabled another Range Rover to perform its own 180-degree turn without human input. Just think, no more pesky three-point turns when you hit a dead-end.

This kind of automation “will not take away the fun of driving,” claims Dr. Wolfgang Eppe, Director of Research and Technology for Jaguar Land Rover, but will “help make real driving safer and more enjoyable.” Yeah, maybe. But elsewhere the press release lays out a glimpse of the future “where the driver gives a simple command from the handset to traverse an obstacle or exit a parking space, and the car does the rest.” Doesn't sound like much fun to us.

“Give a simple command and the car does the rest”

## RAM REBEL PRODUCTION STARTS

**A**ssembly of the Ram 1500 Rebel model has begun at the Warren Truck Assembly Plant in Michigan. The Rebel, available as a crew cab only, is immediately recognizable by its blacked-out grille, the styling of which is a major departure from the “cross-hair” design used on the Ram for decades. Beneath the grille is a powdercoated black front bumper, a powdercoated skidplate (in billet silver), and tow hooks. The Rebel sits a bit higher than the standard Ram and is fitted with 33-inch Toyo Open Country A/T II tires on all-new 17-inch wheels. Ram recently set pricing for the Rebel models, with the 4x4 V-6 versions starting at \$44,720 (less destination fees). Add a Hemi and the base price grows to \$46,370.





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**10th Anniversary Wrangler Rubicon**  
By Christopher M. Jones, Jr. March 2012 Issue 10-12



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#### MOST RECENT ARTICLES



**1962 Willys - Short Bed A Vintage Adventure Willys**  
By Peter Treassey, June 2013  
Has our freedom with cooking-rider Jeeps gone too far? Look, we won't say we haven't been saying that if you find a build that works for your platform and intended usage. It's

[FEATURE](#) [JP MAGAZINE](#) [LIKES](#) [COMMENTS](#)




**1972 GMC 2500 Suburban - Sir 'Burban'**  
By Alan Shubert, May 14, 2013  
The Suburban, in production for a staggering 78 years, holds the record as the industry's longest-running model and the only SUV has almost never made the competitors who have come and went through the years.

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**2014 Chevy Silverado High Country - All Classed Up**  
By Stephen Jensen, February 01, 2013  
Chevrolet has just unveiled its sleek Silverado High Country model which will join the LTZ and Z71 models in the Silverado lineup this fall. We have to admit, we are

[FEATURE](#) [4 WHEEL DRIVE MAGAZINE](#) [LIKES](#) [COMMENTS](#)




**Rigs To Remember**  
By Peter Treassey, Feb. 01, 2013  
It's always fun to reminisce and scratch deep about old rigs, their looks, and seemingly impossible ideas that never quite came to be. Sometimes a quick glance in the proverbial rearview mirror can remind us of things we've

[FEATURE](#) [FOUR WHEELER](#) [LIKES](#) [COMMENTS](#)



**1975 Jeep CJ-5 - Apple Green A One-Of-A-Kind Classic**  
By James Gorman, April 2013  
There is no doubt that Jeep is an American icon. Almost anyone from just about any part of the world knows what a Jeep is, what it's good for, and what it looks like.

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**2013 Pickup Truck Of The Year**  
By Al Mitchell, February 01, 2013  
For over 24 years we've put the wheel and pickup awarded in our head-to-head battle that is Pickup Truck of the Year. It's a competition in the 199-model truck showdown. The pickup has to be all-new or significantly

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## THE DIESELS ARE HERE...ALMOST

The much-rumored, much-anticipated diesel engine option for the Chevy Colorado and GMC Canyon pickups is officially a go. The 2016 models of each truck will be available with a 2.8L Duramax turbodiesel in fall 2016, says GM. More details will be revealed closer to launch. Otherwise, GM's midsize trucks remain largely unchanged for the new year. The Colorado has a new multicolor driver information display. The MyLink system can now display content from iPhone 5S (or later models) through the Apple CarPlay feature. The Canyon now offers a rear sliding window as standard on SLT versions and included in the SLE Convenience Package.



## THIS JUST IN

● **4-WHEELING FOR CHARITY: THERE ARE** two events in the Northeast in October where you can have fun in your 4x4 and help save lives, too. Crawling for a Cure is putting on two trail ride events to benefit breast cancer charities, one in Rumney, New Hampshire, on October 3, and the other in Monson, Massachusetts, October 17. "We are looking to significantly expand the trail rides and attendance at the Monson event," said Jeff Cambray, president of the nonprofit. Last year donations from the two events totaled \$7,000. Let's see if we can bust right through that this year.

● **20-YEAR-OLD CARLOS LOPEZ OF TECATE,** Mexico, was able to hold off a field of far more experienced off-road racers to capture First Overall and the SCORE Trophy Truck win at the Baja 500 in June 2015. Driving solo, Lopez completed the 510-mile race in 8 hours 48 minutes, averaging nearly 58 mph. His margin of victory over Rob MacCachren's Second Place finish was mere seconds, but still, a win is a win. Lopez was the fifth Trophy Truck to start, and he was slowed 100 miles into the race when he lost his brakes, "but after that everything went pretty well," he said.

● **SEMA REPORTS THAT NEW HAMPSHIRE** has signed into law a bill that considers trucks more than 25 years old (regardless of weight) as "antique motor vehicles." As such, these older trucks can take advantage of the state's many accommodations for antique motor vehicles, including minimal registration fees, inspections every two years, and the ability to use year-of-manufacture license plates. However, antique vehicles are to be used only for exhibitions, club activities, parades, and other functions of public interest, says SEMA.

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The **LUND Terrain HX Step™** is an aggressive but functional design, these nerf bars provide a rugged off-road look that also makes it easier to get in and out of a truck. The design adds rocker panel protection from road debris and helps guard against door dings.

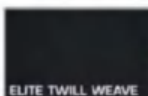


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## EARTH WATCH

### ● THE TDS FOUR WHEEL

Drive Club, which for more than 50 years has staged the Tierra Del Sol Desert Safari, recently made a \$5,000 donation to the BlueRibbon Coalition to help the BRC protect land for recreational use. "I've been attending TDS Desert Safari for BRC for more than 15 years," said Del Albright, BRC Ambassador, "and this 50-member, family-oriented club has a special place in my heart. No other club in my 35 years of land use work has done so much or contributed so greatly to the fights to keep our lands open and our access alive and well."



## OMIX-ADA JEEP COLLECTION GROWS

A 1959 FC-150 cab-forward pickup and a 1978 J-10 pickup have been added to the Omix-ADA Jeep Collection, which is housed at the company's Georgia headquarters. Al Azadi, president and founder of the Jeep parts company, started the collection to "preserve Jeep heritage," he said. Plus, the 20 or so Jeeps in the collection represent the diverse models for which Omix-ADA offers parts and accessories.

The FC-150 is one of 1,546 made in 1959 and is equipped with a hydraulic bed and a later, wider chassis. The J-10 is a low-mileage example with air conditioning and a Levi interior, "a rare option for J-10 pickups," said Dave Logan, the Jeep Collection curator.

The Omix-ADA Jeep Collection runs the gamut from Ford GP and Willys MA prototypes to a 2013 JK. See it in person at the company's HQ or virtually at [jeepcollection.com](http://jeepcollection.com).



## STRAIGHT OUT OF HALO

To celebrate the release of *Halo 5: Guardians* on Xbox,

Ford and Southern California's Galpin Autosports created a one-off F-150 called the Halo Sandcat. The Lariat SuperCrew 4x4 has been fitted with an Addictive Desert Designs' Baja XTR off-road conversion kit, which includes custom Fox Racing shocks, Deaver leaf springs, a Currie full-floater rear axle, ADD fenders, side steps, a chase rack, 17-inch wheels, and a full custom Halo body wrap. Inside is an Xbox One custom gaming system (no surprise) with displays mounted in back of the head restraints. The truck debuted at the E3 gaming convention and will be displayed several more times leading up to the launch of the game in late October.



## OFF-ROAD ICONS

ARB's Australian home office is celebrating its 40th anniversary with a cool project. ARB launched an online poll asking 4x4 enthusiasts to name the four most iconic 4x4s from the last four decades. When the polling closed, ARB would select the top four vehicles, dubbed Off-Road Icons, and then go out and buy one of each, restore them, and pit them in head-to-head competition in Australia's Simpson Desert.

The first of the icons, the Toyota 40 Series Land Cruiser, was announced recently, when the company displayed the Cruiser it purchased at the Explore Australia 4x4 Expo. "The Toyota Land Cruiser 40 Series was Toyota's bestselling vehicle in the '60s and maintained a healthy 24-year lifespan on the market," said ARB. "More than one million were sold around the world, with 121,000 sold in Australia. The reason for its popularity was clear: It was the first four-wheel drive designed with the everyday family in mind. Its durability stands the test of time, with many seen on the roads today."





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# CALENDAR

- **OCT. 1-3:** Maine Mountains Jeep Jamboree, Bethel, ME. Info: jeepjamboreeusa.com
- **OCT. 1-2:** Ozark Adventure Jeep Jamboree, Ozark, AR. Info: jeepjamboreeusa.com
- **OCT. 3:** Crawling for a Cure, Rumney, NH. Info: crawlingforacure.org
- **OCT. 3:** Southern Rock Racing National Championship Finals, Hot Springs ORV Park, Hot Springs, AR. Info: southernrockracing.com
- **OCT. 3:** Getting Started Off-Road Driving Clinic by Badlands Off-Road Adventures, Hungry Valley SVRA, Gorman, CA. Info: 310.374.8047, 4x4training.com
- **OCT. 4:** Getting Started Off-Road Driving Clinic by Badlands Off-Road Adventures, Mojave, CA. Info: 310.374.8047, 4x4training.com
- **OCT. 8-10:** Uwharrie Jeep Jamboree, Troy, NC. Info: jeepjamboreeusa.com
- **OCT. 8-10:** Bluewater Desert Challenge desert race by Best in the Desert, Parker, AZ. Info: bitd.com
- **OCT. 9:** Getting Started Off-Road Driving Clinic by Badlands Off-Road Adventures, Borrego Springs, CA. Info: 310.374.8047, 4x4training.com
- **OCT. 10:** Southern Cruiser Crawl by the Cotton Land Cruisers, Hot Springs ORV Park, Hot Springs, AR. Info: cottonlandcruisers.com
- **OCT. 10:** Advanced Off-Road 201 Course, Kansas Rocks Recreation Park, Mapleton, KS. Info: ksrockspark.com
- **OCT. 11:** Winching Clinic by Badlands Off-Road Adventures, Borrego Springs, CA. Info: 310.374.8047, 4x4training.com
- **OCT. 16-17:** Operation Desert Fun by California Four Wheel Drive Association, Truckhaven 4x4 Training Facility near Borrego Springs, CA. Info: cal4wheel.com
- **OCT. 15-17:** Ouachita Jeep Jamboree, Hot Springs ORV Park, Hot Springs, AR. Info: jeepjamboreeusa.com
- **OCT. 17:** Crawling for a Cure, Monson, MA. Info: crawlingforacure.org
- **OCT. 17:** Creepy Crawl Halloween Event, Kansas Rocks Recreation Park, Mapleton, KS. Info: ksrockspark.com
- **OCT. 18:** Kansas Rocks Recreation Park open to public, Mapleton, KS. Info: ksrockspark.com
- **OCT. 22-24:** Gateway to the Cumberland Jeep Jamboree, Williamsburg, KY. Info: jeepjamboreeusa.com
- **OCT. 22-24:** Moab Jeep Jamboree, Moab, UT. Info: jeepjamboreeusa.com
- **OCT. 23-26:** Death Valley Expedition by Badlands Off-Road Adventures, Death Valley National Park, CA. Info: 310.374.8047, 4x4training.com
- **OCT. 24-25:** Getting Started Off-Road Driving Clinic by Badlands Off-Road Adventures, Borrego Springs, CA. Info: 310.374.8047, 4x4training.com



## RAM TO THE RESCUE

**R**am Truck and the FCA Foundation donated \$100,000 to the First Response Team of America to provide recovery and relief support to residents in flood-stricken central-Texas communities. Efforts will focus on home site recovery and delivering food, water, and cleaning materials. 🇺🇸



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# PART 1: APPALACHIAN SUMMER CAMP



► Building the Ultimate Adventure rig is no simple task. Editor Fred Williams (Freditor?!) and Synergy Manufacturing deserve a huge pat on the back for getting this flat-tie together so quickly (2½ months!) after starting with a few components that are not designed from the factory to fit together. Still, sometimes the little things get overlooked. This year we went with a fancy radiator overflow bottle from Mellow Yellow since we would be in the Southeast. Looks pretty good, huh, y'all?



BY Verne Simons

PHOTOGRAPHY RICKY BERRY, TONY CARVALLO, AND THE 4-WHEEL & OFF-ROAD STAFF

**E**VERY SUMMER, CAMPERS FROM around the country gather at their favorite destinations to enjoy camp activities together. Canoeing, swimming, archery, knot tying, sleeping outside, hiking, fishing, and the like keep campers busy and happy. These campers are young and free, unburdened by the of responsibilities of adulthood, but wishing that they could be older without realizing what that means.

For every year but one of the past 16, *Petersen's 4-Wheel & Off-Road* magazine has assembled a group of young-at-heart campers for the magazine's version of off-road summer camp known as the Ultimate Adventure. When conceived, the Ultimate Adventure was a weeklong trip that tested drivers and vehicles in a variety of extreme off-road terrain as well as on long road days. While these general parameters are still in effect, the comradery and friendship provide the Ultimate Adventure with a definite "summer camp for off-road hooligans" vibe.

With Rick Péwé, our network content director (and ferry aficionado), leading the group from point to point, you should always be ready to expect the unexpected. This year Head Camp Counselor Péwé led our version of summer camp and a group of self-proclaimed Canoeigans over a large portion the Appalachian region of the Eastern United States.

The Canoeigans Summer Camp started in Southeastern Ohio and then traveled in and out of West Virginia, Kentucky, Tennessee, North Carolina, Georgia, and Alabama. There were stops along the way to go 4-wheeling, camping, and canoeing, to snack on ice-cream, and even to ride a ferry or two.

The rules for the UA are pretty simple and designed to keep participants safe, happy, and capable of reaching the end of the trail or road. On top of the usual rules, this year every vehicle had to carry a canoe or other water-displacing device capable of carrying both driver and co-driver across a 150-foot-wide body of water. In general the device of choice was a canoe, hence the unofficial name for our summer camp: Camp Canoeigan. Campers dubbed themselves the Canoeigans. The weather this year was cool and rainy

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Arrival at the hotel for tech inspection is also a great time to address any last-minute repairs or additions that need to be made. It's also a good time to get to know fellow Ultimate Adventurers or hang out with old friends you made at summer camp last year. You'll also get a bag full of sponsor T-shirts and stickers for the event. Keith Bailey's blue bruiser buggy has been on several Ultimate Adventures over the past several years. As a conry rig, the buggy works well and is very reliable.



Network Content Director and Head Camp Counselor (and Guide) Rick Péwé managed to burn up the 4L80E in the CJ-17 Jeep from UA 2010 in Northern Arizona on the way to UA 2015. As a result, Kenny Smith (invited reader from UA 2013), being way too nice for his own good, volunteered up his recently completed orange 1986 CJ-10. Smith also skipped out on the end of his family vacation and drove the Jeep to Ohio for the start of UA 2015, all so that Péwé could beat up his nice Jeep. The Jeep needed a few items to pass tech inspection, including front and rear towhooks.



Need to add a few psi of nitrogen to those coilover shocks? To get an accurate pressure reading, it's best to have the coilover at full extension. The easiest way to do this is to flex it out on a newfound friend's tire just like invited

reader Bill Costa did in his one-of-a-kind 1946 Chevy truck. He and co-driver Derrick Williams brought this unique mix of trail rig and hot rod down from Vermont for the event. It is a textbook idea for building an eye-catching trail rig that any gearhead is bound to love. With 1-ton axles, dual T-cases, a GM 5.3L, and 18-inch-travel shocks on all four corners, this is one well-thought-out rig.

(it rained every day and some days never seemed to stop raining), so our camp probably should have been called Camp Rainagain, Camp Soakinwet, or Camp Soggybottom. Either way, tons of fun and adventure were had despite the rain. Even the first rule, No Whiners, was nearly always adhered to.

## ARRIVAL AND CHECK-IN

The official start of the Ultimate Adventure is usually held at a hotel on a Saturday afternoon and evening. Participants are supposed to arrive in the late afternoon for vehicle tech inspection, to fix any issues that may have become apparent on the drive out, and to see old friends as well as shake the hands of the newcomers. This year we assembled on the eastern border of Ohio in a town called St. Clairesville. Stickers and swag were distributed as participants trickled in. Despite the heavy rain, participants hung out in the parking lot or lobby getting to know one another while checking out each other's vehicles. Everyone told stories, towhooks got welded in place, and gear was checked and repacked, all in anticipation of our first official adventure starting the next morning.

Returning reader Brennan Metcalf brought his trick low-rider Willys MB back for UA 2015. He brought Matt Boka, driver of the red IH Scout from UA 2014, as a co-driver. Since the flattie is parked next to Jeffrey Corwin and co-driver Chris Breidenbach's Range Rover, let's remember that the first Land Rover was built on a surplus WWII Jeep chassis and axles. That makes this MB the Land Rover's vehicular version of a great, great, great, great uncle. We were all anxious to see how well this luxu-ute would do on the UA and were pleasantly surprised.

You, the reader, are the reason we have this event and publish a magazine every month. Without you we would not get to work or play with trucks and 4x4s, and for that we say thanks. Jack Sloan, along with co-driver Jared Cummons, were perfect for Ultimate Adventure. They arrived with the right attitude and willingness to keep on going. Plus, Sloan's 1993 Ford Explorer made for a great Ultimate Adventure rig. For one, it's not a Jeep. We love Jeeps, but variety is the spice of life, and several year models of Explorers make a great platform for a wheeling rig.





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## ULTIMATE ADVENTURE '15

⚙️ Sponsors are also a huge part of the Ultimate Adventure. Not only is the UA a great event for showcasing the utility and durability of various parts and tools, but it's also a great venue for sponsor companies to get out of the office and into the dirt themselves. A company can also get feedback from readers, cronies, other industry experts, and the magazine staff. One product that has stood the test of time and countless Ultimate Adventures is the Hi-Lift jack. Max Dollinger and Derek Phelps joined us for UA 2015 in the Hi-Lift blue TJ.



📺 We produce several stories about the Ultimate Adventure every year, but there is also a week of UA coverage on the Motor Trend channel on YouTube November 16-20. Putting together a video requires having camera guys who work hard while we are all out having fun. To make their lives a little more enjoyable, we conned the folks from Quigley 4x4 Vans into letting us borrow one of their capable passenger vans for the week. With veteran Quigley driver Tiger LeBrun behind the wheel, this GM 1-ton van was sure to see some pretty serious action schlepping camera guys and supplies around behind the scenes.



🔥 We started Day 1 at Powerline Off-Road Park by following some tight trails between trees. Quickly these tight trails became hillclimbs. Péwé attacked one nasty hillclimb in his rental CJ-10. Sharp-eyed readers will notice that both front tires are off the ground. Do you also see the sparks? Something on the front axle hit a rock. Here's to hoping Péwé got full coverage on his rental policy.



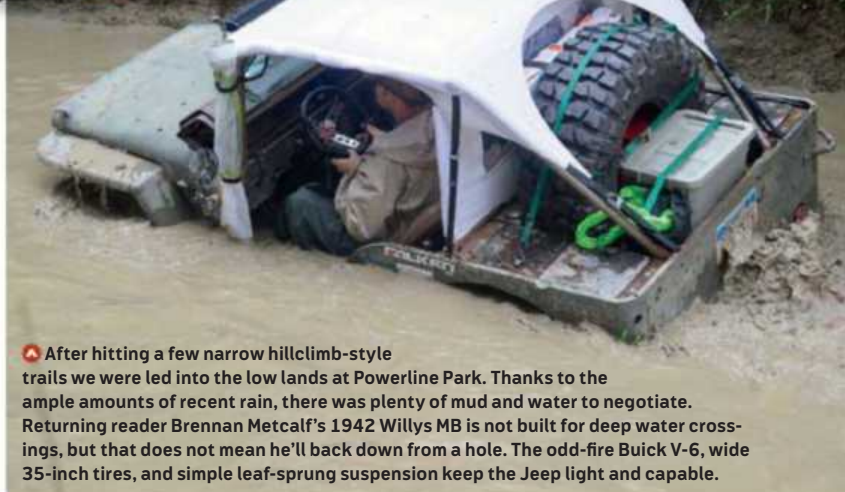
🤖 It's not much of a surprise to anyone that a few Ultimate Adventure participants may roll up to the start a little later than planned. Cooper "Smash" Rasmusen from Offroad Power Products drove solo from Spokane, Washington, to St. Clairesville, Ohio, via Chattanooga, Tennessee, in about three days. He rolled into the hotel parking lot in Ohio just after dark and passed the safety inspection performed by cronies Sam Gillis and Dave Chappelle. Just getting to the UA can be one hell of an adventure. Some participants, namely James and Steven Watson from Offroad Design, reached Ohio after midnight on that Saturday.

⚙️ Offroad Design has been making aftermarket parts for fullsize 4x4s for years. While ORD specialize in GM fullsize trucks and its nearly bulletproof transfer case doubler adapters and boxes, Steven and James Watson also like to build capable trail rigs. This 1985 K30 fits their mold pretty well with a ton of heavy-duty parts, a fire-breathing Pacific Fab-cammed LS3/L92 hybrid GM V-8, and several modifications that make this truck a relatively light-weight buggy in truck's clothing.

### DAY 1: POWERLINE PARK, WHEELING, WEST VIRGINIA

The first official day of UA 2015 was Sunday, June 28, what the Ultimate Adventurers call the first trail day. After a brief drivers meeting at the hotel, the Canoeigians loaded up in their rigs and headed to the Powerline Off-Road Park just outside St. Clairesville, Ohio. Troy Ayers and Greg Eaton served as trail leaders for the day. The trails were wet and slick due to the recent and torrential rains, so the Canoeigians braved deep mud, water, and a few slick and muddy hillclimbs. With trails named Dead Deer Hollow, Happy Hollow, Polish Club Trail, the Circle Track, and the Highwall Ponds, no one from Summer Camp was left dry or bored on our first trail day. Special thanks to Ayers and Eaton as well as their helpers/trail spotters Eric Eaton, Darin Dye, Jeff Donda, and Matt Burghy for all their help and letting us play on their trails.

**ULTIMATE ADVENTURE 2015 4-WHEEL**



🔥 After hitting a few narrow hillclimb-style trails we were led into the low lands at Powerline Park. Thanks to the ample amounts of recent rain, there was plenty of mud and water to negotiate. Returning reader Brennan Metcalf's 1942 Willys MB is not built for deep water crossings, but that does not mean he'll back down from a hole. The odd-fire Buick V-6, wide 35-inch tires, and simple leaf-sprung suspension keep the Jeep light and capable.



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▲ The hood vents on Cooper Rasmussen's 1975 Cherokee Chief may be there to help cool the AMC 360 that powers the truck, but in deep water they serve to vent sloppy muck. Cooper and co-driver Mike "the Ninja" Kim are always fun to hang out with. These guys love what they do for Offroad Power Products even when it means getting dirty or fixing small issues along the way.

▲ Not to be outdone, Falken Tire's own Andrew Hoit hit the deep water in the Falken JK Recon project vehicle. The Brute-esque 2009 JK is powered by a stock 3.8L and spins Falken Wild-Peak MT 38x13.50R17 tires with help from 5.38 axle gears, an Advance Adapters Rubicrawler, and the factory NP241 Rock Track transfer case.



▲ Phil Pasciak and his codriver Chris Larsen brought their 1969 FJ-40 to Ohio from Nevada. Since they hail from the dry Southwest, thick sloppy mud was not their specialty, but they gave this hole one helluva go. They would later prove to be driving a real sleeper. Corby Philips from Warn Industries used this opportunity to show off one of Warn's most iconic winches, the venerable Warn 8274, by pulling the Toyota out of the muck.



▲ The next obstacle of the day was some thick cementlike mud in a creek-bed-turned-trail. Rob Petersen and co-driver Bradley Lindseth used all the power their right-hand-drive formal postal Jeep JK with 146,000 miles on the ticker could muster. Petersen not only put the postal-themed Synergy rig together just before this event, but he also oversaw the construction of Fred Williams' Summer Camp Jeep. He got all that done and also had this mud hole handled.



▲ Somewhere behind all of that mud in the air is UA crony Sam Gillis' green Alabama tube car. He generally runs tail-gunner on the UA. He and Dave Chappelle make a great sweeper crew when readers, cronies, or sponsors have some issue that sends them to the side of the road or trail. Gillis is also one hell of a good driver and takes the tube car almost anywhere he wants with ease.



▲ VJ Perrin weaseled his way back onto the UA this year by striking up a deal to represent Eastwood after being last year's returning reader. His 1985 CUCV is always fun to watch with its swapped-in 12-valve Cummins turbodiesel and NV4500 manual transmission. The big truck is no bantamweight, yet it manages to make its way up almost any trail and somehow retains all of its glass. The big truck flexed like mad on one set of washed-out notches in Ohio.



▲ Somewhere in the woods of Powerline Park, Jeffrey Corwin did his best impersonation of the Camel Trophy in Borneo circa 1985. Straddling one deep mud hole, the Landy almost found itself with its knickers in the wind and its bonnet in the drink. With a little help from a few nearby cronies, the fine British equipment was back on former colonial soil.





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As Day 1 wound down we found our way to an area known as the Circle Track and Highwall Ponds to rinse some of the mud off our tires before heading back to our hotel for the night.

The first day of UA 2015 found more than a few weak links in the chain of Ultimate Adventure vehicles. Jack Sloan's 1993 Ford Explorer has a high-pinion late '70s Ford Dana 44 swapped in place of the stock TTB up front. That's a great axle to put under an Explorer, but the lunchbox locker in the factory carrier was broken. A solid fix was to remove the locker and reinstall the factory side gears so VJ Perrin could pay the bills and use his Eastwood welder to create an Eastwood locker for the injured Ford's axle. This kind of parking-lot fix is typical and what the Ultimate Adventure is all about.



Ah, the road day! As it turns out, Head Counselor Péwé likes to keep us on our toes. An hour or two into our first road day we turned into the Clay Valley Dirt Park near Roseville, Ohio. We weaved our way around a lake until we found this tricky climb with a large V-notch near the top. The notch was tough for just about everyone, including Bill Costa in the hot rod 1946 Chevy.



We like underdogs. Jeffrey Corwin's Range Rover is an easy target, but the rig worked very well. He proved that British 4x4s can be built to do things that no one who has ever test-driven one on the concrete dealer test track would imagine. Still, vehicles sometimes get sleepy while playing out in the woods, and as it turned out the big girl needed a nap.

## DAY 2: FIRST ROAD DAY

One might expect the trail days to be the hardest days on the Ultimate Adventure, but one would often be wrong. Not only are the road days long, but road miles accrue much faster than off-road miles and temperatures are a bit higher for most components. While off-roading is hard on equipment, water intrusion in hubs, diffs, or transmissions may not be noticed until things get good and warmed up at speed on the highway. Day 2 of UA 2015 will go down in history as being a long one. It stretched a good way into the morning of Day 3 before campers could get some sleep.

Despite that, Day 2 started with fun and games as we rolled into Clay Valley Dirt Park for a few hours of play not long after leaving our hotel. Once there, most of us off-loaded our canoes and played on the rocky hills and tight trails. After a bit more off-road action we hit the pavement leading to a ferry. Some 20 hours after leaving our hotel in Ohio, the group found itself in Harlan, Kentucky. We'd like to thank our guides, Ralph and Kyle Painter and Bill Gardner, and our trail spotters, Rachel Reno, AJ Holland, and Shawn Hubbard from Clay Valley, as well as Team Awesome Jeep Club.

## WHO ARE THE CRONIES & WHAT DO THEY DO?

Any small problem on the Ultimate Adventure can cause large delays when the whole group has to stop. For this reason (as well as helping with trail repairs and trail recovery) we have the UA cronies. This ragtag bunch of characters stays with any broken UA rig until a solution can be figured out. This often means relaying info to Péwé, but can also mean late nights helping swap engines, rebuilding axles, swapping tires, and the like. In all honesty, the cronies are friends of the staff of the magazine. They are some of the people we would go 4-wheeling with if we were on vacation and hitting the trails. These people volunteer their time and vehicles, often paying for parts, fuel, and hotels, to participate in the UA. At the end of the day they are the people we, the staff of the magazine, can count on to make sure everyone is safe and sound. Their skill is unparalleled. Being a UA crony is a selfless (and often thankless) task, and thus we offer special thanks now to Keith, Sam, Dave, Trent, Tommy, and Tim, as well as to Clifton Slay, who couldn't make it this year. Thanks for being the glue that holds the Ultimate Adventure together, the wind beneath our wings, the blue stuff in our Porto-Let. We couldn't do this without you, and we love you like family.

Just about the only rigs that made the V-notch look easy were the two crony tube cars from Alabama, and both chose to go wheeling with their canoes on their rigs. Keith Bailey has to be one of the nicest, most patient people on the face of the earth for putting up with lovable co-driver Tom Boyd, one of two people who have been on all of the Ultimate Adventures. Boyd can be kind of like a weasel on speed, rushing around and instigating water balloon fights, telling farfetched stories, and entertaining locals. He's an odd duck, but he is our odd duck, and we love him.





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Tim Hardy is an off-road icon and hero to Suzuki drivers all over the world. He just keeps beating on this poor old red 1987 Samurai, which does not have a 3-square-inch piece of original sheetmetal left that is not dented or bent. Somehow the old rig keeps on going with special low-range transfer case gears (which make it turn 4,500 rpm on the highway at 55 mph), a few trick suspension parts, some axle components borrowed from a Ford, and one heck of a tenacious driver. Rick Reed accompanied Hardy this year as his co-driver and helped him keep the Sammy on the road despite the last 20 years of abuse.



Maybe he was inspired by Tim Hardy. Maybe he didn't want the British SUV to get all the attention. One way or another with the Eastwood locker in the front Dana 44 in full effect, Jack Sloan laid his 1993 Explorer on its side in the V-notch, joining the club of V-notch floppers at Clay Valley Dirt Park. After a shove and a tug the Ford was not much worse for wear.

## BREAKAGE REPORT

Stuff breaks. It's a side effect of off-roading that many of us have to deal with. Add in hard trails and long road days, and weaknesses somehow rise to the surface and become problems. Just to keep everyone humble we keep a list of broken parts from Ultimate Adventure 2015.

### READERS

- **PHIL PASCIAK'S 1969 FJ-40:** Water in distributor; broke entire flange off the rear axle.
- **ROBERT KELLER'S 1989 GMC V3500:** Body damage; rear spring bushing; A/C idler and hose.
- **JEFF CORWIN'S 1998 RANGE ROVER:** Dual sandal blowout; bent rear driveshaft; taillight guard; cracked windshield; passenger-side body damage; rear locker leaking; rear suspension air bag divorced from vehicle with a bang.
- **BILL COSTA'S 1946 CHEVY:** Power steering sector shaft; a few steering arm studs.
- **JUSTIN CARDWELL'S 1994 SUZUKI SIDEKICK:** Body damage; clutch master cylinder.

- **JACK SLOAN'S 1993 FORD EXPLORER:** Rear diff bolts loose; add fluid; broken front locker and hub; body damage.
- **BRENNAN METCALF'S 1942 WILLYS MB:** Broken shock mount; temporarily misplaced fan shroud mounting bolt; wet seats; gas pedal stuck (won't rev).

### SPONSORS

- **EASTWOOD'S CUCV:** Several broken beadlock bolts; dented driveshaft; broken ladder bar; rear leaf springs bent on both sides; cooler spill.
- **HI-LIFT JACK'S JEEP:** Broken axle; destroyed control arm bushing; bent fender; water in differential; engine overheating.
- **OFFROAD DESIGN'S K30:** Vent line puked, causing smoke, fire, and nearly death; driveshaft out of balance; blown fan fuse; engine overheating.
- **BDS SUSPENSION'S CHEVY CRAWLERADO:** Popped bead on front passenger tire; loose pitman arm; rear driveshaft; dented bedsides; damaged yoke; door damage.

- **SYNERGY MANUFACTURING'S POSTAL JK:** Blew radiator; front ring-and-pinion; smoked amp; smoked power inverter.
- **BDS SUSPENSION'S COLORADO SUPPORT TRUCK:** Broken CV shaft (Jeep engineer at fault).
- **FALKEN TIRE'S JEEP JK:** ABS locked up (pulled sensor); broken driveshaft flange.
- **OFFROAD POWER PRODUCTS' CHEROKEE CHIEF:** Jam nuts loosened; broken exhaust bolt; bent exhaust; engine overheating; alternator quit; locker issues.
- **WARN'S JEEP TJ UNLIMITED:** Transmission line broke; brake light fuse popped twice.

### CRONIES

- **TRENT MCGEE'S 1989 BLAZER:** Body damage; taillight; rear tailshaft T-case bushing causing major leaks.
- **SAM GILLIS' GREEN TUBE CAR:** Feelings hurt cuz he had to use a winch.
- **TIM HARDY'S 1987 SAMURAI:** Upper wish one Heim joint broken; wheel bearings burned up; smoking wires; starter quit, started working again, quit, started working again, and so on; fuses; loose lug nuts; drivetrain pops, clicks, and bangs; dents.
- **TOM BOYD'S 2011 NIKES:** Water balloon cannon broken.
- **CHRIS DURHAM'S 1979 FJ-40/JF-45 HYBRID:** Burned coil wire; tie-rod end; bent control arm.

### STAFF

- **FRED WILLIAMS' 1947 WILLYS:** Control arm joint snap ring failure; electric fan wiring failure.
- **RICK PÉWÉ'S 1986 CJ-10:** Dead power steering pump; broken beadlock bolts; broken CB antenna; two-way radio shattered on road; shock bolt fell out—twice; more broken beadlock bolts.
- **VERNE SIMONS' 2007 HIKING BOOTS:** Swamp rot on feet; work laptop died.

### CAMERA & CREW

- **ROCKNOCKER RESOURCES' F-250 SUPPORT TRUCK:** Fire extinguisher went off by accident.
- **SCOTT THE CAMERA GUY:** Tent failed.
- **HARRINGTON VIDEO GENERAL:** Fingernails hurt, and he turned 60 years old!
- **CAMERA CREW:** Destroyed an \$800 microphone and a \$7,000 camera.





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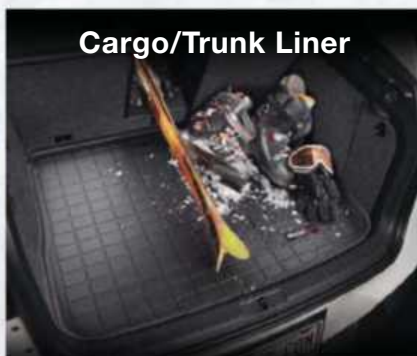
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After playing in the woods of the Clay Valley Dirt Park, canoes were loaded back atop the rigs and we hit the road. Keeping 25 rigs together and something like 53 people all headed in the same direction takes skill and luck. It has been compared to herding cats. Day 2 was wet. In fact, we may have dodged a tornado or two. While the day and weather both seemed never-ending, we got to do some more cool stuff. Namely, we hitched a ride on the *Jenny Ann*, an old ferry that runs from 1 mile west of Higginsport, Ohio, to the town of Augusta, Kentucky. Kevin Stearns piloted his 2011 BDS Crawlerado on to the deck of the ferry as we said farewell to Ohio.

The first obstacle on Day 3 in Harlan, our second trail day, was known as the Waterfall. Everyone in the group struggled with this climb up and over a rounded rock with water trickling down it. Steven Watson was one of a select few who drove the obstacle, and he did so by the judicious and generous application of horsepower.

Fred "East Coast Fred" Perry is an off-road legend and a nice guy. He is always ready with a funny joke, and the guy can flat-out drive. He also knows how and when to push the limits and his silver 2005 LJ, which has been on its lid more than a few times. Perry gave the Waterfall a heck of a go, but decided to let co-driver and Warn representative Corby Phillips run some cable when things got a bit too tipsy. Part of being on the UA is wheeling for the whole week, and that can mean knowing when to push your rig and when to take help.



## DAY 3: SECOND TRAIL DAY

Harlan County is in the heart of coal country in the mountains of eastern Kentucky. The hills in this area are all part of the Appalachian Mountains and contain lots of coal formed 300 million years ago when the region was very different than it is today. As the coal-centered economy dwindled along with the coal veins, a new



source of revenue for the area became important. Four-wheeling on the old logging trails and contour mining paths of the area is a great option to draw money to the county. With 7,000 acres and over 150 miles of trails, the Black Mountain Off-Road Adventure Area is a great place to wheel and spend time with family and friends. We camped at the Putney Trailhead Harlan County Campground & Cabin Rentals near



Heat rears its ugly head on road days. Whether your transmission gets hot, or there's mud in your radiator and the engine starts running hot, or wheel bearings get hot from water intrusion, as the sun set on our first day several participants were chasing heat issues. Cooper Rasmussen and Mike Kim from Offroad Power Products decided to swap their thermostat in the parking lot of a parts store when the AMC 360 kept getting more than warm. Late-night repairs are the cost of getting your rig ready for the next day of the Ultimate Adventure.

Putney and rode just a few of the trails in the Black Mountain Off-Road Adventure Area. Jason Vanover led the way and served as trail guide in his big bad Jeep Wrangler YJ over trails and obstacles with names like Waterfall, Rail Bed, and Steel Hill. Since our ever-present friend the rain was with us again, you can bet that all the trails and rocks were slick as snot, making for some exciting action.



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While almost everyone attempted the Waterfall, only a few made it. This was not for a lack of trying or the number of lines attempted. Justin Cardwell's driving style ensured that everyone on the UA knew that his 2.7L Toyota-powered Suzuki Sidekick had a rev-limiter. He and co-driver Joe Poisel seemed to be pretty confident that the drivetrain in their small wagon would hold up to the abuse, or they just didn't care. Either way, watching them in action was more than just a little bit fun. The group came to expect the rev-limiter and wasn't surprised when there was a rollover. Regardless, the show never failed to disappoint.



Oh Chevy, how sweet things could be if a stock Colorado had more in common with Kevin Stearn's 2011 Colorado. Unlike the factory version, this Colorado has a solid front axle and an LS2 6.0L V-8. Stearn's Colorado also has an NP205 and Offroad Design's Magnum Crawler Box. Oh Chevy, how we'd love to own a truck like this rather than one with an I-5 (whatever the heck that is) and IFS.

Phil Pasciak's 1969 FJ-40 is a sleeper; from its oil-burning Toyota F2 I-6 engine to its simple look, the thing just works. Pasciak also knows how to drive the thing. He just about made it to the top of the Waterfall despite the lack of horsepower. This is the kind of rig we love, something that works and upon closer inspection reveals more than just a few well-thought-out trick parts.



Huh? Who'd have thought that having 550 hp and a set of sticky Falken WildPeak MT tires would help a flatfender make it to the top of the Waterfall? Just like with the Watsons climb, we wish you could hear the sweet sounds of woo-pow that Fred's Summer Camp Jeep was making right about when this picture was taken.



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## ULTIMATE ADVENTURE '15

✱ The next section of trail we hit in Harlan at Black Mountain Off-Road Adventure Area was called Rail Bed. This tricky and slick rock gully tested a driver's ability to pick a line and stay on it despite the lack of traction. UA crony Trent McGee knows how to drive his anvil-strong and simple 1989 Chevy Blazer with 1-ton axles. The truck does not look like much, but with ample room and not enough power to hurt itself, it may have been one of the best all-around vehicles on the trip.



### SOURCES

**BLACK MOUNTAIN OFFROAD  
ADVENTURE PARK**  
606.837.3205  
[blackmountainoffroad.com](http://blackmountainoffroad.com)

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Reader Robert Keller and his co-driver Jary "Jerry" McNeil are from Florida, and we bet that neither one has any rocks in his yard (other than the ones that might have sunk into Florida's sandy and damp soil). Either way, Keller's 1989 GMC V3500 is functional. With its factory 1-ton axles (converted to single wheel hubs) and a shortened wheelbase, the truck just works. Given the lack of rocks in Florida, we bet that these guys and the GMC will be back in Harlan before too long.



UA crony Chris Durham is no stranger to muddy rock trails, having grown up in the Southeast. He cut his teeth on trails all over the South. This year he is driving his friend Bob Poore's 1979 FJ-40/FJ-45 hybrid. Durham likes low-slung rigs with big tires and ample power, and this Toyota is no exception. A GM 5.3L spins a TH350 and an NP205 on the way to 1-ton axles liberated from a CUCV.



The term "rental Jeep" came up during UA 2015. The list of borrowed or company trucks on the trip was long. Among the rentals was the Hi-Lift TJ, which belongs to Austin Harrah and was driven by both Max Dollinger and Derek Phelps. The TJ has a very flexy suspension that often led to the Jeep carrying a tire up obstacles. This rental never flopped over but often came close, making for spectacular photos.



Another rental or company truck was the custom Falken JK driven by Andrew Hoit and co-driver Martin Castro. The Jeep works very well and has extensive suspension and body modifications to form an awesome trail rig/super-capable chase rig for Falken racers and events. Man, would we like to have a company truck like that!

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## PART 1: MEET THE READERS & SPONSORS

BY Trenton McGee PHOTOGRAPHY BY 4WOR STAFF

**E**VERY YEAR 4X4 ENTHUSIASTS FROM ALL OVER THE country converge at an undisclosed location for a week of adventure, fun, and sleep deprivation. The individuals that make up this group come from all walks of life: industry folks, writers, photographers, videographers, and regular people just like you. It's amazing that all of the different personalities, attitudes, and vehicle types always manage to form the cohesive group that is the Ultimate Adventure. Everyone is quick to lend a hand, whether it's pulling a winch cable, spotting a vehicle up a difficult section of trail, or loaning a tool. The vehicles range from scratch-built custom rigs to 4x4s with a few simple bolt-ons. A couple of clapped-out trucks are often thrown in for good measure.

This month we highlight the readers and sponsors who attended, and next month we'll take a closer look at the cronies, staff, and support vehicles. Want to be a part of it? Start gathering ideas from this year's vehicles, get to work on your own 4x4, and apply to be a part of next year's fun at [4wor-ua.com](http://4wor-ua.com).

### READER



#### THE BRITISH INVASION

**1998 LAND ROVER RANGE ROVER**  
DRIVERS: Jeffrey Corwin and Chris Breidenbach

**W**e're not sure if Rick Péwé and the rest of the staff went off their meds [How

*did you know we are on meds? —Ed.] when they selected a British 4x4 to attend the Ultimate Adventure, but we're glad they did. Jeff Corwin and co-driver Chris Breidenbach were responsible for the first-ever Land Rover to attend a UA. They may*





## READER

### RETURNING READER

**1942 WILLYS MB**

**DRIVERS:** Brennan Metcalf and Matt Bokan

Each year we invite one reader from the previous year to return. We couldn't resist seeing more of Brennan Metcalf's really cool flatfender. But this year we got a two-for one, as Brennan's co-driver was none other than Matt Bokan, himself a veteran of last year's UA in his Scout II. Brennan applied the same KISS principle to this year's UA that he used to build his little flattie and kept the changes to

a minimum. The biggest modification he made was sewing his own top, which turned out to be a very wise addition when the rain came down. Matt and Brennan were a great team and barely had to turn a wrench on the flattie the entire week, proving that this rig is well built and extremely capable.

#### >DRIVETRAIN

**ENGINE:** Buick 225 V-6

**TRANSMISSION:** T-18

**TRANSFER CASE:** Dana 20

**FRONT AXLE:** Narrow-track CJ Dana 30, Spartan Locker, 5.38

**REAR AXLE:** Narrow-track CJ Dana 44, Ox Locker, 5.38

#### >SUSPENSION

**SPRINGS & SUCH:** Superlift 1-inch springs front and rear

**TIRES & WHEELS:** 35x12.50-15 BFGoodrich Krawler T/As on beadlock wheels

**STEERING:** Saginaw 4-bolt steering box

**WINCH:** Belleview 6,000

**LIGHTING:** Lifetime LED light bar

**OTHER STUFF:** Custom frame, raised front fenders, tons of detail with a clean, simple execution

## SPONSOR

### FALKEN TIRE

**2009 JEEP**

**RUBICON**

**UNLIMITED**

**DRIVERS:** Andrew Hoit and Martin Castro

Falken Tire may be a new sponsor on the UA this year, but this was not the company's first foray into the dirt. The company came out in full force with the Falken JK Recon piloted by VP of Sales Andrew Hoit and co-dawg Martin Castro. The Recon is a highly modified Rubicon that was built to be the Swiss army knife of 4x4s; from rockcrawling to chasing desert racers and Ultra 4 cars, this JK can do it all. It also turned out to be a great UA vehicle, with adequate room for gear and plenty of traction on hand thanks to the 38x13.50-17 Falken WildPeak MTs. With a flexy coilover suspension and an experienced driver behind the wheel, this JK had no issues throughout the trip other than a front driveshaft on the third trail day.



#### >DRIVETRAIN

**ENGINE:** 3.8L V-6

**TRANSMISSION:** Stock

**TRANSFER CASE:** Rubicon with Advance Adapters Rubi-Crawler

**FRONT AXLE:** Dynatrac ProRock 60, ARB Air Locker, 5.38

**REAR AXLE:** Dynatrac ProRock 60, ARB Air Locker, 5.38

#### >SUSPENSION

**SPRINGS & SUCH:** Long-travel suspension with King coilovers (front); Cantilever long-travel with King coilovers (rear)

**TIRES & WHEELS:** 38x13.50-17 Falken WildPeak MTs on 17x9.5 Walker Evans beadlocks

**STEERING:** PSC ram-assist with high-steer kit and FK Heims

**WINCH:** Warn 10K

**LIGHTING:** TruckLite LED headlights, PIAA auxiliary lights

**OTHER STUFF:** Chappelle Kustom sliders, Gen-Right bumpers, MasterCraft seats, Tuffy Security lock boxes, Optima batteries, AEV hood

have forgotten the Grey Poupon, but they left nothing on the table when it came to getting the well-cultured truck up all the serious obstacles. Despite good-natured ribbing from several people in the UA pack (especially when we were wheeling on the Fourth of July), the duo represented the island nation well—and it helps that they are both

Denver-based Land Rover techs with their own shops. This sleeper sports custom air suspension and upgraded axles, and the owner sports a never-say-die attitude. The Rover experienced some driveshaft and suspension issues, but contrary to the assumptions

of several in the group, it was moving under its own power and not even marking its own territory at the end of the trip.

#### >DRIVETRAIN

**ENGINE:** 4.6L V-8

**TRANSMISSION:** Stock automatic

**TRANSFER CASE:** Stock BorgWarner

**FRONT AXLE:** Factory Rover, ARB Air Locker, RCV axleshafts, 4.10

**REAR AXLE:** Factory Rover, ARB Air Locker, chromoly axleshafts, 4.10

#### >SUSPENSION

**SPRINGS & SUCH:** Modified factory radius arms with air suspension, OME shocks

**TIRES & WHEELS:** Factory wheels with 315/75-R16 BFGoodrich Mud-Terrain T/As

**STEERING:** Stock

**WINCH:** Warn 9,000

**LIGHTING:** Stock

**OTHER STUFF:** Custom modified suspension, fabricated front bumper and roof rack, 1-inch body lift, aftermarket seats





## READER

### HOT ROD 4X4

#### 1946 CHEVY TRUCK

**DRIVERS:** Bill Costa and Derrick Williams

**B**ill Costa had a late-model fullsize Chevy truck that he wheeled the snot out of until an especially tight trail caused him to basically tear the whole side off the truck, so he decided to swap everything into something smaller. Costa's 1946 Chevy is the result of hundreds of hours of work, but the finished product is amazing. It looks good in pictures, but seeing it in person is the only way to appreciate the amazing detail that went into this unusual wheeler. Costa and co-driver Derrick Williams were quick to lend a hand and also made short work of tackling the hard-

est obstacles on all the trails. The truck has been together long enough for all the bugs to have been worked out, and with it the Vermont residents did a great job representing all the Northeast wheelers out there.

#### >DRIVETRAIN

**ENGINE:** Chevy 5.3L  
**TRANSMISSION:** 4L60E  
**TRANSFER CASE:** 203/205 Doubler with twin-stick  
**FRONT AXLE:** Locked Dana 60, 5.13  
**REAR AXLE:** Locked 14-bolt, 5.13

#### >SUSPENSION

**SPRINGS & SUCH:** Custom 4-link with 18-inch coilovers front and rear  
**TIRES & WHEELS:** 38.5x13.50-17 Falken WildPeak MTs on 17x9 Pro Comp wheels

**STEERING:** Hydraulic with high-steer arms

**WINCH:** Smittybilt 12K

**LIGHTING:** Stock

**OTHER STUFF:** Tons of bodywork, custom fenders, much more



## SPONSOR

### OFFROAD DESIGN

#### 1985 CHEVROLET K30

**DRIVERS:** Stephen and James Watson

**L**ike Fred Perry, it's hard to imagine an Ultimate Adventure without Stephen Watson and his father James. The purveyors of Offroad Design have brought a variety of Chevy trucks with a similar formula over the years: a tube, or ranch, bed; big tires; V-8 power; and of course one of their signature Doubler or Magnum transfer cases. Fullsize Chevys are big and have lots of space, but they also tend to be heavy. ORD's latest creation keeps the fullsize truck theme, but they put this truck on a serious diet. The K30 has a well-dialed ORD suspension controlling the usual 1-ton axles, but with a twist: the front axle's differential is on the wrong side. Motivating this clean convert-

ible is a Tilden Motorsports-built LS3 hybrid that has more than enough woo-pow to throw the lightweight truck up just about anything.

#### >DRIVETRAIN

**ENGINE:** Tilden Motorsports LS3/L92 hybrid  
**TRANSMISSION:** TH400

**TRANSFER CASE:** Offroad Design Magnum Ford 205

**FRONT AXLE:** LH Dana 60, ARB Air Locker, 4.88

**REAR AXLE:** GM 14-Bolt, ARB Air Locker, 4.88

#### >SUSPENSION

**SPRINGS & SUCH:** Offroad Design coilover system with 14-inch travel (front); ORD coilover system with 16-inch travel (rear)

**TIRES & WHEELS:** 40-inch Nitto Trail Grapplers on Trail Ready HD 17 beadlock wheels

**STEERING:** N/A

**WINCH:** Warn Xeon 10-S

**LIGHTING:** Lifetime LED

**OTHER STUFF:** Shortened frame, convertible cab, Airaid intake, PRP seats, Goatbuilt fuel tank; built from body and frame parts lying around the shop for the last 12 years

## SPONSOR

### OFF ROAD POWER PRODUCTS

#### 1975 JEEP CHEROKEE CHIEF

**DRIVERS:** Erik "Cooper" Rasmussen and Mike Kim

**T**he Spokane-based Off Road Power Products team of Erik "Cooper" Rasmussen and Mike Kim was great entertainment. Instead of bringing one of their usual diesel-powered vehicles, the OPP crew built a 1975 Cherokee Chief that had lots of great parts and just the right amount of patina. The fresh build had the expected number of gremlins to work out, but in a first for the duo, there were no major failures. The fresh 360 was topped with MSD Atomic

fuel injection for reliability, while a 14-bolt and beefed-up Dana 44 sent torque to the 37-inch Falkens. Some sheetmetal was massaged along the way, but Rasmussen managed to avoid the full smash treatment this year and was able to drive it off the last trail at the end of the week.

#### >DRIVETRAIN

**ENGINE:** AMC 360  
**TRANSMISSION:** TH400  
**TRANSFER CASE:** NP205 with ORD twin-stick

**FRONT AXLE:** Dana 44, ARB Air Locker, Chromoly axleshafts, 4.88

**REAR AXLE:** GM 14-Bolt, ARB Air Locker, Chromoly axleshafts, 4.88

#### >SUSPENSION

**SPRINGS & SUCH:** 3-link with 12-inch Fox coilovers (front); 4-inch BDS leaf springs with Synergy 6-inch shackles and OPP



spring hangers (rear)  
**TIRES & WHEELS:** Method 105 beadlocks with 37x12.50-17 Falken WildPeak MTs  
**STEERING:** PSC ram-assist with Artec arms  
**WINCH:** Warn Xeon 10-S

**LIGHTING:** Mixture of KC and Baja Designs

**OTHER STUFF:** Full rollcage, PRP seats, Atomic EFI, MSD ignition, Mercenary Off-Road front and rear bumpers, Art Carr shifter, SPod accessory wiring





## READER

### WEST VIRGINIA EXPLORER

**1993 FORD EXPLORER**

**DRIVERS:** Jack Sloan and Jared Cummons

**J**ack Sloan and co-driver Jared Cummons are quite possibly the first readers on the UA to hail from West Virginia. They did a great job representing their home state. Sloan piloted his 1993 Ford Explorer with confidence and little concern for body damage. He left much of the vehicle alone with the exception of retrofitting a high-pinion Dana 44 and Ford radius arm suspension in place of the factory TTB. Sporting 4.88 gears and lunchbox lockers, the vehicle is otherwise mostly stock and works well. Sloan wasn't scared to put the maroon sheetmetal in harm's way, and perhaps in anticipation of body damage he even removed most

of the windows in advance. The rig and the team were solid all week, with only a front locker issue briefly slowing them down on the first day.

#### >DRIVETRAIN

**ENGINE:** Stock 4.0L

**TRANSMISSION:** Stock A4LD Auto  
**TRANSFER CASE:** BorgWarner 1354E

**FRONT AXLE:** Dana 44 high-pinion, crony-installed welded diff, 4.88

**REAR AXLE:** Ford 8.8, lunchbox locker, 4.88

#### >SUSPENSION

**SPRINGS & SUCH:** Early Bronco radius arms with 5½-inch coils (front) and SOA leaf springs (rear)  
**TIRES & WHEELS:** 35x12.50-15 Falken WildPeak MTs on American Racing 15x8 wheels

**STEERING:** Modified for solid axle conversion

**WINCH:** Rugged Ridge 10.5K

**LIGHTING:** Stock

**OTHER STUFF:** Custom front and rear bumpers, interior rollcage, Corbeau seats, DIY onboard air



## SPONSOR

### HI-LIFT JACK

**1998 JEEP WRANGLER TJ**

**DRIVERS:** Austin Harrah, Max Dollinger, and Derek Phelps

**H**i-Lift Jack's Austin Harrah enlisted the help of Max Dollinger to build a TJ in preparation for UA. Unfortunately, Harrah had last-minute family commitments that prevented him from making all but the last day of the UA, so Dollinger and Derek Phelps made the trip in Harrah's Jeep, aka the rental. The Jeep sports a very flexy suspension, perhaps a bit too flexy at times, as it would often lift a tire or two on obstacles or even when going around corners. But thanks to careful driving by Dollinger and Phelps, it was never on its side or lid. In fact, the team

spent very little time wrenching on the Jeep. Dollinger is the owner of a 4x4 shop in Louisville, and Phelps works for Hi-Lift based in Bloomfield, Indiana.

#### >DRIVETRAIN

**ENGINE:** 4.0L

**TRANSMISSION:** AX-15 manual

**TRANSFER CASE:** Dana 300

**FRONT AXLE:** Dana 44/60, Detroit Locker, RCV axleshafts, 4.56

**REAR AXLE:** Ford 8.8, spool, 4.56

#### >SUSPENSION

**SPRINGS & SUCH:** 3-link with Fox coilovers (front); 4-link with Fox coilovers (rear)

**TIRES & WHEELS:** 37x12.50-17 Nitto Trail Grapplers on Raceline beadlock wheels

**STEERING:** stock

**WINCH:** Warn Zeon 10 Platinum

**LIGHTING:** Stock

**OTHER STUFF:** JCR bumpers front and rear, Factor 55 ProLink, Tuffy Security center console, Hi-Lift jack and accessories

## SPONSOR

### BDS SUSPENSION

**2011 CHEVROLET CRAWLORADO**

**DRIVERS:** Kevin Stearns and Clark Cole

**K**evin Stearns represented BDS Suspension this year and brought what is quite possibly the perfect late-model vehicle for the UA. The recipe? Take one V-8-powered Colorado, replace the stock 5.3L with a 6.0L LS2, replace the IFS suspension with a ProRock 60, install a matching ProRock out back, insert an Offroad Design Magnum, add BDS suspension bits, and peel out. Stearns is a veteran UA participant and his shop built last year's Tug-Truck, so he knew exactly what it took to survive

the trip. The one detail he didn't make quite public? The Colorado is his wife's. No word yet on how she felt about the bedside and fender "modifications." The body damage would have been a lot worse if not for the careful spotting of co-driver and BDS suspension guru Clark Cole.

#### >DRIVETRAIN

**ENGINE:** 6.0L LS2

**TRANSMISSION:** 4L65E

**TRANSFER CASE:** Offroad Design NP205 Magnum

**FRONT AXLE:** Dynatrac ProRock 60, Detroit Locker, 4.88

**REAR AXLE:** Dynatrac ProRock 60, Detroit Locker, 4.88

#### >SUSPENSION

**SPRINGS & SUCH:** Adapted BDS JK 4-inch long arm with Fox coilovers (front); BDS leaf springs (rear)

**TIRES & WHEELS:** 37-inch Pitbulls



on 17-inch American Eagle wheels  
**STEERING:** Modified  
**WINCH:** Warn Zeon 10S  
**LIGHTING:** Vision X  
**OTHER STUFF:** Custom Pacific Fabrication bumpers front and rear, bed rack, rock sliders



## READER

### LOW TECH FJ-40

1969 TOYOTA LAND CRUISER

DRIVERS: Phil Pasciak and  
Chris Larsen

**P**hil Pasciak and co-driver Chris Larsen are a textbook example of what we look for in the readers who come on the UA: super-cool, laidback, helpful guys in a thoroughly sorted-out vehicle that just flat-out works. Further, these two knew exactly how to handle whatever terrain was in front of them. The FJ-40 itself is really nothing special: a carbureted stock six-cylinder that burns a little oil, with leaf springs and beefed up axles. But the guys knew every inch of the Cruiser and what it was capable of, and they pushed it to the limit. A fairly catastrophic break of a rear axle right at the flange would have been a huge deal for most people, but these two Nevadans had it fixed in 20 minutes because they had spares and knew how to use them. If winners were ever



declared for the UA, Phil and Chris would have been serious contenders. For these and other reasons, Pasciak earned the coveted Tom Boyd Award at the victory dinner for living the UA's "No Whiners" motto.

>**DRIVETRAIN**  
**ENGINE:** Toyota 2F I-6

**TRANSMISSION:** GM SM420  
**TRANSFER CASE:** '73 Toyota with Fairy OD

**FRONT AXLE:** 9.5-inch Toyota with factory electric locker, 4.88

**REAR AXLE:** 9.5-inch Toyota with Detroit Locker, 4.88

>**SUSPENSION**

**SPRINGS & SUCH:** BDS rear FJ-40 springs with shackle reversal (front); BDS 5-inch YJ springs with inboard hangers (rear)

**TIRES & WHEELS:** 17x9 Method beadlocks with 37x12.50-17 Falken WildPeak MTs

**STEERING:** Saginaw power steering with 1-ton rod ends, 4x4 Labs low-steer arms

**WINCH:** Warn 8274

**LIGHTING:** Stock

**OTHER STUFF:** 4-wheel disc brakes, York onboard air, welder, shower, DOM fenders, dual Optima batteries

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## READER

### WOO-POW

1994 SUZUKI SIDEKICK

**DRIVERS:** Justin "Rev Limiter" Cardwell and Joe Poisel

Justin Cardwell and Joe Poisel showed up late on check-in day due to a blown transmission but thanks to the help of Tom's 4x4 Superstore, they had things back together in a few short hours. For the next seven days they proceeded to beat on the Suzuki like it owed them money. The Sidekick benefits from mostly Toyota drivetrain as well as a driver and co-driver who are self-appointed rev-limiter testers for Toyota. Obstacles were not so much attempted as attacked. Their high mark on a particular 400-yard stretch of hill in North Carolina still has people talking.

These guys put on an awesome show on every obstacle they attempted.

#### >DRIVETRAIN

**ENGINE:** Toyota Tacoma 2TR-FE 2.7L

**TRANSMISSION:** Toyota R150

**TRANSFER CASE:** Dual Toyota gear-drive cases, 4.7 and 2.28 low ranges

**FRONT AXLE:** Toyota FJ-60, electric locker, 5.29

**REAR AXLE:** Toyota FJ-80 full-floater, electric locker, 5.29

#### >SUSPENSION

**SPRINGS & SUCH:** 4-link with 14-inch coilovers and air bumps front and rear

**TIRES & WHEELS:** 38x13.50-17 Falken WildPeak MTs on American Racing wheels

**STEERING:** Hydraulic

**WINCH:** Warn HS 9500i

**LIGHTING:** Stock

**OTHER STUFF:** Upgraded clutch, custom cage, suspension seats, plated frame and rockers



## SPONSOR

### WARN

2005 JEEP WRANGLER TJ

UNLIMITED

**DRIVERS:** Fred Perry and Corby Phillips

Warn has sponsored the UA longer than any other company, and for virtually all of those years, Warn has invited Fred Perry to represent the company. Perry may have a few years under his belt, but like a bad penny, he just keeps turning up. In all seriousness, we love him and couldn't imagine an UA without him. This year he partnered with Warn's Corby Phillips, and the duo drove Perry's clean and capable LJ. Always ready with a dirty joke and never afraid to step on the throttle when necessary, Perry is proof positive that age

and treachery trump youth and enthusiasm every time. As for Phillips, he probably dropped 20 pounds pulling winch cable for the group this year thanks to all the rain and slick conditions.

#### >DRIVETRAIN

**ENGINE:** 4.0L

**TRANSMISSION:** 42RLE automatic

**TRANSFER CASE:** Atlas II

**FRONT AXLE:** Currie RockJock 60, Detroit Locker, 5.38

**REAR AXLE:** Currie RockJock 60, Detroit Locker, 5.38

#### >SUSPENSION

**SPRINGS & SUCH:** Tera LCG with Fox 2.5 Air shocks front and rear

**TIRES & WHEELS:** 39x12.50-17 BFGoodrich Krawlers on 17-inch Walker Evans beadlocks

**STEERING:** PSC ram-assist

**WINCH:** Warn Zeon 10 Platinum

**LIGHTING:** Warn

**OTHER STUFF:** Warn bumpers front and rear, Warn compressor, Corbeau seats, Rockhard cage kit



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35X12.50-20LT 10PR





## READER

### NOT A CHEVY

1989 GMC V3500

DRIVERS: Robert Keller and Jary McNeil

Robert Keller was quick to point out that his GMC is not a Chevy. Built from several GM vehicles that were lying around Keller's yard, the truck has just the right amount of patina and somehow escaped the tin worm that is so common in Keller's home state of Florida. His GMC is a study in simplicity: heavy-duty axles, bulletproof drivetrain, and a few key modifications to make it well suited to handling the UA. The heavy Chevy was light on its feet when it came to handling the slick, tight trails of Appalachia. The shortened wheelbase was a big help, and we appreciated the fact that

Keller and co-driver Jary McNeil made sure all of the truck's clearance lights were functional. Sometimes it's the details that count.

#### >DRIVETRAIN

ENGINE: Chevy 350

TRANSMISSION: SM465

TRANSFER CASE: NP205

FRONT AXLE: Dana 60, Spartan Locker, 4.11

REAR AXLE: 14-Bolt, Grizzly Locker, 4.11

#### >SUSPENSION

SPRINGS & SUCH: 52-inch springs and 14-inch King shocks (front); 56-inch springs with shackle slip and 12-inch Rancho shocks (rear)

TIRES & WHEELS: 38x13.50-17 Falken WildPeak MTs on 17x9 Cragar wheels

STEERING: Crossover steering with hydro assist

WINCH: Warn Zeon 12

OTHER STUFF: Custom-built bed with toolbox and fuel tank, wheelbase shortened 42 inches, 1410 driveshaft



## SPONSOR

### SYNERGY MANUFACTURING

2007 JK WRANGLER POSTAL

DRIVERS: Rob Peterson and Bradley Lindseth

The UA started a few months prior to the first day for Rob Peterson, who not only had to build and prep the company's unique right-hand drive mail Jeep, but he and his team also built the UA flattie from scratch. Somehow Peterson was able to pull off both builds, and in record time. He said the mail Jeep was put together last-minute, just a few days prior to the start of UA. The Jeep benefits from a host of Synergy products and performed well but had a few teething problems, including a blown radiator and a broken ring-and-pinion. He and co-driver Brad Lindseth were able to overcome all of these problems with a smile even though they made the

questionable choice of bringing a shade-screen top rather than a real bikini or soft-top to the wettest UA on record.

#### >DRIVETRAIN

ENGINE: Stock 3.8L

TRANSMISSION: Stock

TRANSFER CASE: Advance

Adapters Atlas II 3.8

FRONT AXLE: Currie RockJock 44, ARB Air Locker, Yukon 5.13s

REAR AXLE: Currie RockJock 60, ARB Air Locker, Yukon 5.13s

#### >SUSPENSION

SPRINGS & SUCH: Synergy 4-inch Stage 4 long arm with 8-inch rear stretch kit, Synergy progressive coils, 2½-inch Fox shocks

TIRES & WHEELS: 37x12.50-17 Falken WildPeak MT on Trail Ready beadlocks

STEERING: N/A

WINCH: Warn Zeon 10-S

LIGHTING: KC HiLites 7-inch LED headlights

OTHER STUFF: Synergy Mfg. skidplates, rollcage kit, Baja Basket, and onboard shower; Poison Spyder bumpers, rocker guards, front fenders, and 8-inch stretch quarter panels; Curri Anti-Rock sway bars; PSC ram-assist steering; Optima battery

## SPONSOR

### EASTWOOD

1982 CHEVY CUCV

DRIVER: VJ Perrin

The Eastwood Company tapped UA veteran VJ Perrin to represent Eastwood on the trip this year. Perrin brought back his iconic CUCV military truck. Sporting a 5.9L Cummins, a modified military trailer bed, 1-ton axles, and a fish cooler big enough to hold a small whale, his truck was a great land anchor. That's not to say that he had difficulty on the tight trails or that he shied away from difficult obstacles, because Perrin made his truck do things it shouldn't have been able to do. Plus, he rarely needed the assistance of

the Warn winch onboard. Somehow the CUCV was able to handle the abuse and Perrin barely had to spin a wrench on his own rig. Meanwhile, the Eastwood welder he carried came in handy several times, including making an "Eastwood Locker" for reader Jack Sloan.

#### >DRIVETRAIN

ENGINE: 5.9L Cummins

TRANSMISSION: NV4500

TRANSFER CASE: NP205

FRONT AXLE: Dana 60, chromoly shafts, Detroit Locker, 4.56

REAR AXLE: 14-bolt, Detroit Locker, 4.56

#### >SUSPENSION

SPRINGS & SUCH: 8-inch BDS springs front and rear, BDS shocks

TIRES & WHEELS: 38x13.50-17 Falken WildPeak MT on Raceline wheels



STEERING: N/A

WINCH: Warn Zeon 12 with wireless remote

LIGHTING: Lifetime LED

OTHER STUFF: interior cage, bed cage, 70-gallon fuel tank, Eastwood welder, fish cooler, loose nut behind wheel



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**COVER SECTION: ULTIMATE ADVENTURE 2015**

**ULTIMATE  
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# ULTIMATE SUMMER CAMP JEEP



**PART 3:  
SUSPENSION,  
PROTECTION  
& BODYWORK**



BY Fred Williams

PHOTOGRAPHY FRED WILLIAMS

**T**HE ULTIMATE SUMMER CAMP Jeep came together quicker than you might imagine, as can be seen in the coverage of our annual weeklong on/off-road-trip starting on page 24. Every year we build a vehicle as the official vehicle of UA. This year we constructed a scratch-built Jeep with a variety of new and recycled parts. Two and a half months is an incredibly short time to build a 4x4 that has to work off-road and run down the highway at speed, but the crew at Synergy Manufacturing pulled it off. There is a 550hp supercharged V-8 under the hood, a four-speed automatic with a Magnum 205 transfer case for plenty of gearing, and race-prepped Spidertrax axles that spin 38-inch Falken tires under a custom flexy suspension. The Jeep is a mixture of the latest technology under an old-school body, and that was because of the story behind the Jeep.

The goal was a Jeep that never really existed but could have. We imagined an old prototype military Jeep with a longer-than-standard flatfender wheelbase and a taller cowl. We actually developed a whole story about how this Jeep was made for military testing where more cargo was needed and a rare supercharged four-cylinder was being developed for high-speed desert recon. When the program was canceled the Jeep was scrapped, but saved from the crusher by a crazy old guy who worked as a camp counselor. From there we pictured it ending up at various summer camps where it was used as a maintenance Jeep for years, hauling stuff around for the upkeep of the camps and basically working in the woods for the enjoyment of the campers. Because of this, the Jeep was painted various colors over the years, but the inside still carried the olive drab paint. When those stock old Army seats wore out in the 1970s, a pair of plaid VW bus seats found its way in the Jeep. Eventually the old codger died and the Jeep was parked in an apple orchard to rot. And then we found it and rescued it and made it into our Ultimate Summer Camp Jeep. All we had to do is build up the body some, add a new set of plaid seats, and swap in all our favorite drivetrain parts.

Of course, all of this "history" is constructed just like our Jeep—from scratch—but that explains the look and feel of the Ultimate Summer Camp Jeep and why it looks like no Jeep ever made.

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**1** The Ultimate Summer Camp Jeep (USCJ) has an aluminum tub made by Aqualu that started out as a CJ-3B body but was stretched to accommodate a 108- to 109-inch wheelbase. The floor of the tub was left open to clear the Gearstar 4L80 transmission and Magnum 205 transfer case with a reduction box from Offroad Design. We eventually built a removable tunnel cover for the floor for access for any repairs.

**2** The rear suspension of the USCJ uses coilover shocks that attached to towers high up inside the rear wheelwell. The frame was cut out so the towers could be recessed into the framerrails to keep the shocks tight inside the body.

**3** The front suspension link mounts are boxed for strength, and the mounting bolts are protected within. The mounts hang below the frame, but the link will act as a ramp so they won't hang up the Jeep going forward. And we're hoping 38-inch Falkens and 550 hp will keep us from going backward!

**4** The rear upper suspension links hit the frame just shy of the rear of the transfer case. We added a crossmember made of square tube that will clear the rear driveshaft. The link mounts tie into the corner of the crossmember and the frame for strength. We are using BDS Suspension flex joints on the majority of the suspension links.

**5** The rear lower links are a trailing arm design. The uppers are triangulated to locate the axle side-to-side. The lowers have the rear shock mounts integrated into the links, so they are not attached to the axle itself. The links will have both coilover shocks and bypass shocks. The bypass shocks allow different shock resistance depending on the axle location, they can get very aggressive as the axle nears full compression to settle down the axle without a hard bump—but more on that later.



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window sliders that allow the windshield to flip out. The cage is built of 1 $\frac{3}{4}$ -inch chromoly DOM tubing and is fully TIG-welded. Eastwood is the official welder of the UA. Note that the front cross tube runs just along the bottom of the dash.

**12** The cage was moved in fully welded, and then we added a tilt steering column mount, which means the cage is now not removable from the tub. The tub can still be removed from the frame so it can be repaired if need be. The front cross tube for the seats is made of parts that are bolted together in order to access and remove the center hump panel.

**13** We pulled the body off the frame and threw it on the trailer so it could go to paint, but there is still more work to show. Stay tuned for the next installment. Also, on November 10, 2015, you can watch the whole buildup on *Dirt Every Day*, presented by 4-Wheel Parts, on YouTube. 

## SOURCES

**AQUALU**  
888.765.6714  
aqualu.com

**GEARSTAR PERFORMANCE TRANSMISSIONS**  
330.434.5216  
gearstar.net

**GO WESTY**  
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**6** The rear Falkens are a little flat! Actually, this is the template to show us how high up a 38-inch mud tire will be when the suspension is fully compressed.

**7** The idea behind our USCJ came from the 1940s military prototype MLW2 (Military Long Wheelbase version 2), so when we needed to cut out the rear wheel opening of the Aqualu tube we mimicked that old veteran. Many Jeepers will think we went with a Wrangler-style opening, but not so. It's a much older historical precedent.

**8** About this time our seats showed up from PRP. These are extra-wide suspension seats but with custom plaid fabric. We got the fabric from a Volkswagen van restoration shop known as GoWesty. The fabric isn't for everyone. We got lots of complaints on social media complaints about the crazy color, but we think it's so different it's cool. Or maybe we're just crazy ourselves.

**9** A flatfender doesn't need much in the way of a bumper. The grille is pretty narrow, and the tires need access to the rocks they want to crawl over. So Synergy fabricated a super-simple bumper to house our Warn Zeon winch. We know flatfenders always have the iconic Warn 8274 winch, but we wanted as little obstruction as possible to keep airflow coming for the supercharged V-8's cooling system. Note our ingenious towhooks with shackle points for recovery purposes.

**10** With new seats in hand, Synergy started fabricating our rollcage. The cage is just enough to cover driver and passenger—no seatback tubes, no back-of-tub kickers. Just the bare minimum, yet with plenty of protection for the crew.

**11** To keep the overall height to a minimum, we trimmed the Omix ADA replacement MB windshield frame as well. To keep the cage tight and clean, we also had to remove all the

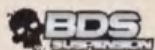




12



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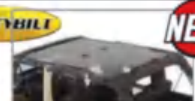
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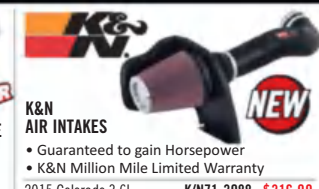
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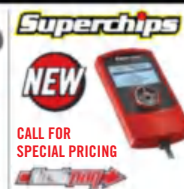
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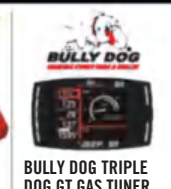
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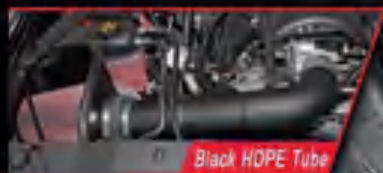




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See knfilters.com for CARB status on each part for a specific vehicle

CHEVROLET	YEARS	ENGINE	NOTE	HP GAIN	PART#	PRICE
1500	14-15	5.3L	2	+11 hp	K/N63-3082	\$247.99
1500	09-13	4.8L	2	+10 hp	K/N63-3070	\$305.99
1500	09-13	5.3L	2	+10 hp	K/N63-3070	\$305.99
2500 HD/3500	2015	6.6L DSL	2	+24 hp	K/N63-3087	\$346.99
2500 HD/3500	11-14	6.6L DSL	2	+19 hp	K/N63-3077	\$296.99
Tahoe	2015	5.3L	2	+11 hp	K/N63-3082	\$247.99
Tahoe	08-14	5.3L	2	+10 hp	K/N63-3070	\$305.99
Tahoe	08-14	5.3L	2	+10 hp	K/N63-3070	\$305.99
FORD						
F150 Z	015	5.0L	1	+13 hp	K/N77-2591K1	\$329.99
F150	11-14	5.0L	2	+12 hp	K/N63-2581	\$266.99
F150	11-14	3.5L	2	+11 hp	K/N63-2583	\$278.99
SVT Raptor	10-14	6.2L	2	+20 hp	K/N77-2579KTX	\$343.99
P250F350 SD	11-15	8.7L DSL	2	+12 hp	K/N63-2582	\$365.99
P250F350 SD	11-15	6.2L	2	+14 hp	K/N77-2582KTX	\$368.99
JEEP						
Wrangler	12-15	3.6L	2	+12 hp	K/N63-1566	\$296.99
Wrangler	12-15	3.6L	2	+12 hp	K/N63-1566	\$296.99
Wrangler	07-10	3.6L	1	+8 hp	K/N57-1553	\$262.99
Wrangler	97-06	4.0L	1	+12 hp	K/N57-1514-1	\$243.99
RAM						
1500	11-14	5.7L	2	+16 hp	K/N63-1561	\$220.99
1500	11-12	4.7L	2	+9 hp	K/N63-1529	\$318.99
2500/3500	13-15	6.7L DSL	2	+15 hp	K/N63-1568	\$219.99
2500/3500	13-14	5.7L	2	+16 hp	K/N63-1561	\$220.99
2500/3500	11-12	8.7L DSL	2	+8 hp	K/N63-1562	\$448.99
TOYOTA						
Tacoma	12-14	4.0L	2	+9 hp	K/N63-9037	\$262.99
Tacoma	05-13	2.7L	2	+7 hp	K/N63-9026	\$314.99
Tacoma	05-11	4.0L	2	+10 hp	K/N63-9025	\$266.99
Tundra	10-14	4.6L	2	+14 hp	K/N63-9035	\$296.99
Tundra	12-14	5.7L	2	+9 hp	K/N63-9036	\$296.99
Tundra	07-11	5.7L	2	+13 hp	K/N63-9031-1	\$274.99

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2) Street Legal in most states, not legal for sale or use in California or other states with similar emission control regulations.

\*Estimated horsepower and torque gains based on specific or similar vehicle dynamometer tests. Results will vary.



Truck and Jeep Accessories

### Daystar Leveling Kits

Application	Height	Description	Part #	Price
<b>Chevy / GM</b>				
07-15 Silverado/Sierra 1500 2WD/4WD	2"	Front Leveling Kit	DAYKG091398K	\$69.99
14-15 Silverado/Sierra 1500 2WD/4WD	2"	Front & Rear Leveling Kit	DAYKG091388K	\$218.99
07-13 Silverado/Sierra 1500 2WD/4WD	2"	Front & Rear Leveling Kit	DAYKG091188K	\$218.99
11-15 Silverado/Sierra 2500 2WD/4WD	2"	Front Leveling Kit	DAYKG09123	\$129.99
99-10 Silverado/Sierra 2500 2WD/4WD	2"	Front Leveling Kit	DAYKG09107	\$129.99
14-15 Tahoe/Suburban/Yukon 2WD/4WD	2"	Front Leveling Kit	DAYKG091348K	\$129.99
<b>Ford</b>				
10-14 F-150 Raptor 4WD	2"	Front Leveling Kit	DAYKF091298K	\$129.99
09-15 F-150 2WD/4WD	2"	Front Leveling Kit	DAYKF091248K	\$129.99
05-15 F-250/F-350/F-450/F-550 4WD	2.5"	Front Leveling Kit	DAYKF091198K	\$129.99
99-15 F-250/F-350/F-450/F-550 2WD	2"	Front Leveling Kit	DAYKF091018K	\$129.99
<b>Dodge</b>				
09-15 Ram 1500 4WD	2"	Front Leveling Kit	DAYKC091138K	\$129.99
09-15 Ram 1500 4WD	2"	Front & Rear Leveling Kit	DAYKC091148K	\$159.99
94-13 Ram 2500/3500 4WD	2"	Front & Rear Leveling Kit	DAYKC091228K	\$218.99
13-15 Ram 2500/3500 4WD	2"	Front Leveling Kit w/Shocks	DAYKC091388K	\$239.99
14-15 Ram 3500 2WD	2"	Front Leveling Kit	DAYKC091348K	\$159.99
<b>Toyota</b>				
05-15 Tacoma 2WD/4WD	2.5"	Front Leveling Kit	DAYKT091188K	\$129.99
07-15 Tundra 2WD/4WD	3"	Front Leveling Kit	DAYKT091258K	\$129.99
10-13 4Runner 2WD/4WD	2.5"	Front Leveling Kit	DAYKT091338K	\$129.99
07-14 FJ Cruiser 2WD/4WD	2.5"	Front Leveling Kit	DAYKT091248K	\$159.99
07-14 Sequoia 2WD/4WD	3"	Front Leveling Kit	DAYKT091258K	\$129.99
<b>Jeep</b>				
07-15 JK 2WD/4WD	1.75"	Front & Rear Leveling Kit	DAYKJ091378K	\$159.99
07-15 JK 2WD/4WD	3"	Front & Rear Kit w/ Shocks	DAYKJ091538K	\$369.99
97-06 TJ 2WD/4WD	1.75"	Front & Rear Leveling Kit	DAYKJ091038K	\$129.99
97-06 TJ 2WD/4WD	2.75"	Front & Rear Kit w/ Shocks	DAYKJ091608K	\$459.99
84-06 TJ/KJ/ZJ 2WD/4WD	1.75"	Leveling Kit (Pair)	DAYKJ091008K	\$39.99
84-01 XJ Cherokee 2WD/4WD	1.75"	Front & Rear Leveling Kit	DAYKJ091058K	\$169.99

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### Hood Cowls & Vents

Application	Description	Part #	Price
07-16 Jeep JK	Side Hood Vents	DAYKJ71048BK	\$121.99
07-16 Jeep JK	Center Hood Vents	DAYKJ71049BK	\$69.99
95-06 Jeep YJ / TJ	Hood Vents	DAYKJ71042BK	\$79.99

### Hood Wranglers

Application	Description	Part #	Price
07-16 Jeep JK	Hood Wrangler	DAYKJ09146BK	\$24.99
97-06 Jeep TJ	Hood Wrangler	DAYKJ09146BK	\$24.99

### Dash and Switch Panels

Application	Description	Part #	Price
11-15 Jeep JK	Dash Panel with GPS/Phone Cradle	DAYKJ71047BK	\$35.99
07-10 Jeep JK	Dash Panel with GPS/Phone Cradle	DAYKJ71020	\$24.99
07-10 Jeep JK	Switch Panel	DAYKJ71030	\$19.99
07-10 Jeep JK	A-Pillar Switch Pod w/ switches	DAYKJ71044BK	\$69.99

### D-Ring Isolators

From \$15.99 DAYKU70057BK

### Winch Isolators

From \$29.99 DAYKU70039BK

### 20 AMP Rocker Switches

From \$10.99 DAYKU80011



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225/75R16	BFG10598	\$105.99	37X12.50R17	BFG12987	\$318.99
235/85R16	BFG75445	\$103.99	265/65R18	BFG05260	\$245.99
245/75R16	BFG15477	\$105.99	265/70R18	BFG40355	\$247.99
265/75R16	BFG67179	\$116.99	275/65R18	BFG38467	\$222.99
285/75R16	BFG05855	\$107.99	275/70R18	BFG80887	\$208.99
305/70R16	BFG34102	\$220.99	285/65R18	BFG03857	\$247.99
315/70R16	BFG50203	\$216.99	325/65R18	BFG01547	\$301.99
265/70R17	BFG66255	\$195.99	35X12.50R18	BFG13380	\$296.99
265/70R17	BFG76397	\$205.99	275/55R20	BFG12579	\$211.99
275/70R17	BFG76597	\$188.99	275/60R20	BFG64811	\$236.99
285/70R17	BFG87228	\$236.99	275/65R20	BFG17764	\$274.99
34X10.50R17	BFG81644	\$270.99	285/65R20	BFG88423	\$334.99
35X12.50R17	BFG50022	\$285.99			

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### All Terrain T/A KO

Tire Size	Part#	Price	Tire Size	Part#	Price
215/75R15	BFG02821	\$129.99	275/70R16	BFG94223	\$221.99
235/75R15	BFG29274	\$139.99	295/75R16	BFG82042	\$231.99
31/10.50R15	BFG03118	\$163.99	37/12.50R17	BFG12987	\$318.99
33/10.50R15	BFG63540	\$164.99	265/70R17	BFG12565	\$208.99
33/12.50R15	BFG09881	\$173.99	305/65R17	BFG00875	\$278.99
35/12.50R15	BFG40774	\$188.99	265/65R18	BFG05260	\$245.99
225/70R16	BFG02204	\$191.99	285/65R18	BFG38857	\$247.99
235/70R16	BFG72870	\$183.99	305/65R18	BFG35237	\$311.99
235/85R16	BFG75445	\$103.99	305/55R20	BFG30836	\$368.99
245/70R16	BFG03219	\$106.99	285/55R20	BFG38710	\$378.99
245/75R16	BFG15477	\$105.99	325/60R20	BFG38941	\$468.99
255/70R16	BFG78762	\$202.99	325/50R22	BFG35858	\$638.99

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### Mud Terrain KM2

Tire Size	Part#	Price	Tire Size	Part#	Price
235/75R15	BFG05826	\$183.99	LT305/65R17/E	BFG34424	\$318.99
30/9.50R15	BFG15076	\$175.99	35/12.50R17/D	BFG38371	\$324.99
31/10.50R15	BFG68852	\$200.99	37/12.50R17/D	BFG25419	\$407.99
32/11.50R15	BFG11079	CALL	LT305/60R18/E	BFG31489	\$368.99
33/12.50R15	BFG37847	\$204.99	35/12.50R18/D	BFG28459	\$421.99
35/12.50R15	BFG53290	\$219.99	37/12.50R18/D	BFG87218	\$550.99
235/70R16	BFG72870	\$183.99	LT305/65R20/E	BFG20881	\$531.99
235/85R16	BFG20317	\$210.99	LT325/60R20/D	BFG34143	\$584.99
245/75R16	BFG41771	\$238.99	37/12.50R20/D	BFG39143	\$679.99
255/85R16	BFG04222	\$205.99	42/14.50R20/C	BFG96757	\$846.99
265/75R16	BFG19683	\$223.99	LT335/55R22/D	BFG10687	\$681.99
LT315/75R16/D	BFG24970	\$313.99	37/12.50R20/D	BFG39143	\$679.99
LT3245/70R17/E	BFG13859	\$241.99	42/14.50R20/C	BFG96757	\$846.99
LT3285/70R17/D	BFG37837	\$265.99	LT335/55R22/D	BFG10687	\$681.99

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By Harry Wagner

PHOTOGRAPHY HARRY WAGNER

**C**UMMINS ENGINES ARE LEGENDARY for their ability to make big power easily, tow anything, and last half a million miles with routine maintenance. As for the transmissions that Dodge put behind these engines, well, they have a reputation too. When power levels are left stock, the 47RE and 48RE transmissions are (barely) adequate. These transmissions were never intended to handle quadruple-digit torque numbers. They evolved from 727 Torque-Flight transmissions originally designed in the 1960s to live behind gas engines.

An entire industry exists to upgrade the 48RE transmissions to live behind big power, from billet torque convertors to 300M

input shafts to full manual valve bodies. While these parts offer a huge increase in strength, they are not cheap. In an effort to keep our tow rig reliable while we wrench on other projects, we have babied the automatic transmission in our 2006 Ram 2500 MegaCab and exercised extreme restraint (if we do say so ourselves) by refraining from adding a programmer to the Cummins engine.

Our prudence is paying off, but after 85,000 miles it was time to service our transmission. We couldn't afford to have the truck down for repairs for long, but we always try to use maintenance as an opportunity to upgrade to better parts. That was what led us to Mag-Hytec and Amsoil. Both companies make high-quality products at affordable prices, which makes the decision to upgrade instead of merely maintain easy.



**1** The fins on the Mag-Hytec pan add surface area that provides additional cooling at speed. The pan is cast from aircraft aluminum, and all hardware is 303 stainless steel. Mag-Hytec even includes the properly sized Allen wrench for installation.

# KEEP YOUR COOL

## MAG-HYTEC'S INSURANCE POLICY FOR YOUR TRANSMISSION







**2** The factory 48RE transmission pan does not have a drain plug, so draining the transmission is a messy affair. We put a drain pan under the truck and a large piece of cardboard under the drain pan to catch whatever fluid didn't make it into the pan.

**3** The aluminum Mag-Hytec pan is thicker than the stock stamped transmission pan. The thicker, more rigid construction allows the Mag-Hytec pan to stiffen the entire transmission assembly, resulting in less case flex and the potential for broken parts.

**4** The deep Mag-Hytec pan we installed on our Ram holds a full gallon of additional ATF. We filled the pan with Amsoil Signature Series synthetic ATF to provide our transmission with the best possible lubrication, particularly at the extremes of the temperature spectrum where conventional ATF either flows poorly (cold) or breaks down (heat).

**5** Most Mag-Hytec transmission and differential covers come equipped with a recessed O-ring, but the company told us that rubber and cork gaskets do not seal well on the 48RE transmission. Instead, the company includes a Transtar fiber gasket, which has remained leak-free on our installation.

**6** The Mag-Hytec pan we installed came equipped with a drain plug (with O-ring) and a threaded port for a temperature sending unit. Monitoring transmission temperatures is always a good idea and is critical if you use your 4x4 for heavy towing or racing.

**7** If you order directly from Mag-Hytec, the company includes the appropriate transmission filter with your pan. Also included was a transmission filter extension, all necessary hardware, Allen wrenches for the hardware, and detailed instructions.

**8** Mag-Hytec makes two different transmission pans for the 48RE (and all 727 TorqueFlight derivatives). We chose the extra-deep pan, which requires the installation of the included extension to put the filter in the bottom of the deep pan.

**9** We were able to install the Mag-Hytec pan quickly with minimal tools. Our lifted truck on 37-inch Pro Comp XMT2s had enough room underneath that we didn't even have to break out a floor jack to perform the installation. The extra volume provides more fluid to dissipate heat, and more fluid can a larger number of particulates in suspension before it needs to be changed.

**10** Once the pan was installed we filled the transmission with high-quality Amsoil Signature Series synthetic automatic transmission fluid. Heat is the biggest killer of automatic transmissions, and Amsoil's ATF is specially formulated to provide excellent stability and wear protection at the elevated temperatures where conventional transmission fluid can break down. 🚗

## SOURCES

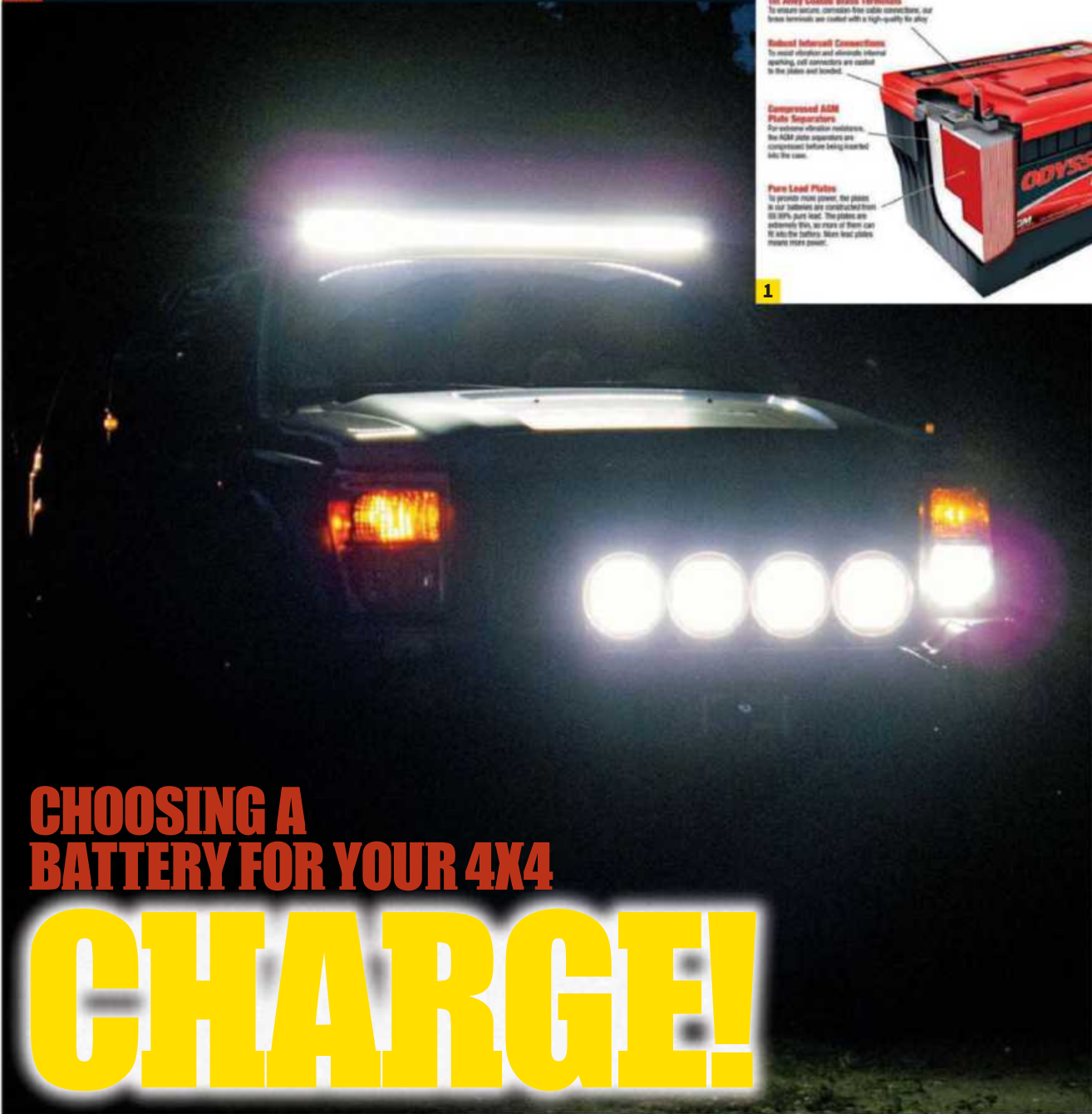
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**Pure Lead Plates**  
To provide more power, the plates in our batteries are constructed from 99.99% pure lead. The plates are extremely thin, so more of them can fit into the battery. More lead plates means more power.

# CHOOSING A BATTERY FOR YOUR 4X4 CHARGE!

By Harry Wagner

PHOTOGRAPHY COURTESY OF THE MANUFACTURERS AND HARRY WAGNER

**B**ATTERIES ARE NOT GLAMOROUS, particularly when compared to items like LED light bars or winches. The problem is that neither of those accessories on the front of your rig will do you much good without a battery. The stock battery and alternator are adequate for powering the factory electronics, but as you add more accessories, consider a battery upgrade. The upgrade can come in different forms.

You might replace your original battery with a more powerful absorbed glass mat (AGM) battery in the factory location, or even install a larger (or smaller) battery in an aftermarket battery box.

Automotive batteries consist of six electrochemical cells, each producing 2.1 volts through a chemical reaction. Two lead plates are found in each cell, a positive and a negative. Electrons traveling from the positive plate to the negative plate generate electricity. In a traditional battery, that chemical reaction happens in sulphuric acid inside the cells. The issue for off-roaders is that this acid can leak when subjected to vibration, creating a

mess in your engine bay. Vibrations can also cause the lead plates to break loose, short-circuiting that cell.

Instead of cells that are flooded with a liquid electrolyte, an AGM battery, such as those offered by Odyssey and Optima, has this fiberglass material that is filled with the electrolyte. With lead plates and electrolyte-saturated fiberglass mat filling the interior of the battery case, the AGM battery acts as a single solid unit.

Even in the same size package as the factory battery, AGM construction provides increased cranking amps compared to a traditional flooded battery. The easiest upgrade you can make to your vehicle





“So fire up that winch with confidence”

## KNOW THE LINGO

- **COLD CRANKING AMPS (CCA)** are the most common barometer we use when comparing batteries, but a variety of other terms are useful when comparing specifications between various battery brands and sizes.
- **BATTERY COUNCIL INTERNATIONAL (BCI) GROUP SIZE:** The BCI Group Size refers to a battery's maximum physical dimensions. Groups 31, 34, and 78 are the most common sizes in most 4x4s if you are looking for a drop-in replacement.
- **CRANKING AMPS (CA):** The number of amps a battery at 32 degrees F can deliver for 30 seconds while maintaining a minimum voltage of 7.2 volts.
- **COLD CRANKING AMPS (CCA):** The number of amps a battery at 0 degrees F can deliver for 30 seconds while maintaining a minimum voltage of 7.2 volts.
- **DEPTH OF DISCHARGE (DOD):** The percentage of the battery's total power that is discharged. A deep discharge refers to a DOD under 50 percent of the battery's potential, and is useful for 4x4s that are subjected to hard winching or if you like to run your stereo all night in camp.
- **HOT CRANKING AMPS (HCA):** The number of amps a battery at 80 degrees F can deliver for 30 seconds while maintaining a minimum voltage of 7.2 volts, or 1.2 volts per cell.
- **RESERVE CAPACITY (RC) OR RESERVE CAPACITY MINUTES (RCM):** The minutes a battery at 80 degrees F can deliver a continuous 25-amp current while maintaining 10.5 volts.

is to replace the stock battery with an AGM battery of the same size (Group 34 is a common size in many 4x4s). AGM batteries also do a better job of being full discharged, such as during heavy winching, and being recharged without damage.

You may require even more power for your ear-pounding stereo or to turn over your high-compression engine. Or, conversely, perhaps you have a lightweight buggy that only has room for a small battery under the hood. Odyssey offers batteries in a variety of shapes and sizes to fit any application. Obviously the larger the battery the more power, but space and budget

constraints are also factors in determining which battery is right for you. Another factor is securely mounting the battery in place. Batteries are heavy, and expensive, so you never want to rely on a bungee cord or ratchet strap to secure them. There's a wide selection of battery boxes on the market from companies such as Artec Industries and Trail-Gear that are made for specific battery models and that can be bolted in place of the factory battery tray or anywhere space allows. So fire up that LED light bar and winch with confidence and without concerns about your battery stranding you on the trail. ⚡

**1** Odyssey use 99.9 percent pure lead in its batteries. While this costs more than recycled lead or lead alloy, it allows for increased amperage in the same size package compared to a traditional lead acid battery.

**2** Unlike in other batteries, the lead in each cell of an Optima battery is rolled in a proprietary Spiracell technology. This packaging method is vibration resistant and means that even if one cell is damaged for some reason, the others can still power the vehicle.

**3** Since they do not give off gas and cannot spill, AGM batteries can be mounted inside the cargo compartment of your 4x4 to free up space under the hood. Remember to make the battery easy to reach in the event you need to jumpstart it.

**4** Artec Industries makes battery boxes that fit a variety of Odyssey, Optima, and Die Hard batteries. This bracket allowed us to mount a compact Odyssey PC680 behind the driver seat, where it is easy to access.

**5** Vehicles parked for extended periods are prone to discharge, particularly late-model vehicles with many electrical accessories. If your 4x4 sits for a long time, consider adding a Battery Tender to keep the battery full charged for the next time you want to hit the trail.

**6** Some batteries use post terminals, while others use accept ring terminals. The terminals can be located on the side of the battery or the top of the battery. Odyssey offers post terminals that can be added to any of the company's batteries to retain compatibility with your factory cables. Here we used standard hardware to ease the addition of jumper cables and covered the positive post to ensure that we do not arc across the battery.

## SOURCES

**ARTEC INDUSTRIES**  
855.278.3299  
artecindustries.com

**BATTERY TENDER**  
877.456.7901  
batterytender.com

**ODYSSEY BATTERY**  
800.538.3627  
odysseybattery.com

**OPTIMA BATTERIES**  
888.867.8462  
optimabatteries.com

**TRAIL-GEAR INC.**  
559.252.4950  
trail-gear.com



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#### 2007-2013 1500 PU / SUV 4WD

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4.75"	Combo Kit-3.5" Susp/1.25" Body	\$549.95
5"	Complete Kit w/N2 Rear Shocks	\$999.95
6"	Complete Kit w/N2 Rear Shocks	\$999.95
7.5"	Complete Kit w/N2 Rear Shocks	\$999.95

#### 2011-2015 2500HD PU 4WD

1.5-2"	Front Leveling Torsion Keys	\$119.95
5" / 7.5"	Complete Kit w/2.0 Shocks	\$1399.95

### DODGE



#### 2009-2015 1500 Ram PU 4WD

2.5"	Front Leveling Kit	\$129.95
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#### 2014-2015 2500 Ram PU 4WD

2.5"	Front Leveling Coil Spacers	\$99.95
5"	Complete Kit w/Radius Arms	\$999.95

#### 2003-2013 2500/2003-2012 3500 Ram 4WD

2"	Front Leveling Coils	\$179.95
2.5"	Front Leveling Spacers	\$99.95
5"	Complete Kit w/2.0 Shocks	\$699.95
5"	X-Series Kit w/Adj Arms & Shocks	\$899.95
5"	Long Arm Kit w/2.0 Shocks	\$1299.95

### FORD



#### 2015 F-150 4WD

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5"	Complete Kit	<b>NEW!</b>	\$1299.95
6"	Complete Kit	<b>NEW!</b>	\$1299.95

#### 2009-2014 F-150 4WD

2.5"	Front Leveling Strut Extensions	\$99.95
4"	Complete Kit	<b>NEW LOW PRICE!</b> \$999.95
6"	Complete Kit	<b>NEW LOW PRICE!</b> \$999.95

#### 2005-2015 F-250 Super Duty 4WD

3"	Complete Kit w/Front Spacers	\$379.95
3"	Series II Kit w/Coil springs	\$499.95
4.5"	Complete Kit w/2.0 Shocks	\$649.95
6"	Radius Arm Drop Kit w/Shocks	\$799.95
6"	4-Link Radius Arm Kit w/Shocks	\$1299.95

\*2009-2011 models ONLY!

### JEEP JK



2.5"	Coil Spacer Kit	\$139.95
2.5"	Coils w/shock relocation	\$249.95
2.5"	Coils w/Perf. 2.2 shocks	<del>\$349.95</del> - \$329.95
3.25"	Coils w/Perf. 2.2 shocks	\$399.95
3.5"	Complete Kit w/N2.0	\$499.95
3.75"	2.5" susp. / 1.25" body (Auto)	\$419.95
4"	Complete Kit w/shocks	<del>\$575.95</del> - \$499.95
4"	X-series Kit	<del>\$1249.95</del> - \$1199.95
6"	X-series Kit	\$1339.95
4"/6"	Long Arm Upgrade Kit*	\$1199.95
4"	Long Arm Suspension*	\$1999.95
6"	Long Arm Suspension*	\$2099.95

### JEEP TJ



0.75"	Leveling Spacers	\$39.95
1.5"	Coil Spacer Kit	\$199.95
2"	Coil Spacer Kit	<del>\$129.95</del> - \$109.95
2.5"	X-series Kit w/X-Flex arms	\$949.95
3.25"	Coils w/N2.0 shocks	<del>\$399.95</del> - \$369.95
3.75"	2" susp. / 1.25" body	<del>\$429.95</del> - \$389.95
4"	Complete Kit w/N2.0	<del>\$549.95</del> - \$499.95
4"	X-series Kit w/X-Flex arms	\$999.95
6"	X-series Kit w/X-Flex arms	\$1049.95
2.5"	Long Arm Suspension	\$1499.95
4"	Long Arm Suspension	\$1599.95
6"	Long Arm Suspension	\$1649.95

### JEEP XJ



1.5"	Coil Spacer Kit	\$249.95
3"	Coils w/ N2.0 Shocks	\$255.95
3"	Series II Kit w/N2.0 Shocks	\$345.95
4.5"	Complete Kit w/N2.0	<del>\$499.95</del> - \$459.95
4.5"	X-series Kit w/X-Flex arms-N2.0*	\$829.95
6.5"	X-series Kit w/X-Flex arms-N2.0*	\$899.95
4.5"	Long Arm Suspension	\$1299.95
4.5"	Long Arm Suspension*	\$1399.95
6.5"	Long Arm Suspension*	\$1449.95

\*Includes new rear leaf springs

\*2012-2015 models add \$190 to long arm kit cost

### JEEP WJ/ZJ



#### 1999-2004 WJ Grand Cherokee

2"	Coil Spacer Kit w/N2.0 Shocks	\$249.95
4"	Complete Kit w/Perf 2.2 Shocks	\$649.95
4"	X-series w/X-Flex Arms	<del>\$799.95</del> - \$749.95
4"	Long Arm Suspension	\$1499.95

#### 1993-1998 ZJ Grand Cherokee

1.5"	Coil Spacer Kit w/Shocks	\$205.95
3.5"	Complete Kit w/N2.0 Shocks	\$399.95
4"	Series II Kit w/arms & Shocks	\$599.95
4"	X-series Kit w/X-Flex arms - N2.0	\$779.95
4"	Long Arm Suspension	\$1499.95

### NISSAN



#### 2004-2015 Titan 4WD

2"	Front Leveling Strut Extensions	\$99.95
3"	Front Leveling Kit w/Upper Arms	\$349.95
4"	Complete Kit	<b>NEW LOW PRICE!</b> \$999.95
6"	Complete Kit	<b>NEW LOW PRICE!</b> \$999.95

#### 2005-2014 Frontier / Xterra 4WD

1.5"	Rear Lift Shackles	\$64.95
2.5"	Front Leveling Strut Extensions	\$99.95
2.5"	Complete Kit	\$149.95

#### 1986.5-1997 D21 Hardbody PU 4WD

1.5-2"	Complete Kit w/Upper Arms	\$339.95
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### TOYOTA



#### 2007-2015 Tundra 4WD

2.5-3"	Front Leveling Kit	\$129.95
2.5-3"	Leveling Lift Kit w/rear blocks	\$169.95
4.5"	Complete Kit w/2.0 Rear Shocks	\$1249.95
6"	Complete Kit w/2.0 Rear Shocks	\$1299.95

#### 1999-2006 Tundra 4WD

2.5"	Leveling Lift Kit w/rear blocks	\$269.95
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#### 2005-2015 Tacoma 4WD

3"	Leveling Lift Kit w/rear blocks	\$249.95
4"	Complete Kit w/2.0 Rear Shocks	\$999.95
6"	Complete Kit w/2.0 Rear Shocks	\$999.95

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BY Jay Kopycinski

PHOTOGRAPHY JAY KOPYCINSKI

**L**ITTLE DID CHRIS CONNORS KNOW 15 years ago when he ordered this 2001 Nissan Frontier that it would end up as it is today. You see, it was originally a 2WD Desert Runner model that he drove for a few years until he was mildly bit by the off-road bug. By 2004 he had converted the truck to 4WD using salvaged factory Nissan IFS parts and some aftermarket pieces.

There were a few other mods here and there over the next seven years while Chris spent some trail time in his converted IFS truck, but a major rebuild started in the summer of 2011. The bed had seen contact with a few trees and obstacles and was looking a little worse for wear, so it was scrapped to make room for a fresher one. The front IFS was stripped to the frame and the rear axle removed.

A high-pinion Ford Dana 60 front axle was sourced and retubed to get the differential in the right location, then Reid Racing inner knuckles were installed by East Coast Gear Supply. A Corporate 14-bolt axle received similar surgery for the rear, then AxleTech portal boxes were added to both axles. An ARB air locker resides up front and a Detroit locker sits in the rear. The ring-and-pinion ratio is 4.10:1, while the portals provide a 1.5:1 ratio on the high-clearance axles. Wilwood disc brakes were added all around.

After plating the front framersails, Chris began to fabricate the front three-link suspension using 12-inch-travel ORI STX struts. A 9-inch-stroke AGR hydro assist ram was added to help the Ford F-150 box and 1-ton GM tie-rod components with



## A HIGH-CLEARANCE TRAIL NISSAN

# PORTAL FRONTIER

**1** Chris Connors designed and fabricated a custom three-link front suspension using Ballistic 3.0 forged joints on the 2¼-inch DOM tubing links. Once everything was in place he suspended the front end with a pair of ORI STX struts with piggyback reservoirs. The 12-inch-travel shocks are mounted to custom strut towers that Chris fabricated. A forward-facing steering box from a 1978 Ford F-150 runs a flat pitman arm for the crossover steering. Treads are 37-inch Maxxis Trepadors on 17x10 Stazworks double-beadlock wheels with 8 inches of backspacing. The bumpers have excellent recovery points, and Chris fabricated slots in each bumper to securely accept a Hi-Lift jack foot. A custom 19-gallon auxiliary fuel tank sits in the bed with a dedicated fuel pump under a roll-top bed cover.







## PORTAL FRONTIER

**2** Poke your head under the front of this truck and you'll find a sweet 16 inches of clearance under the differential. That's because Chris mated a set of AxleTech portal boxes (1.5:1 reduction) to the modified Ford high-pinion Dana 60. Stopping power is increased with a Ford SuperDuty brake master cylinder pushing fluid to Wilwood calipers.

**3** Chris trimmed the bottom skirts on the bed, then fabricated his own bumpers and swingout tire carrier. ShrockWorks rock sliders protect the rockers. Up front he has tucked a Warn 8274 winch into the bumper. It has been upgraded with a modern 9.5XP motor and contactor. Out back is a Warn M8000 winch behind the custom bumper.

**4** Out back Chris took a 14-bolt axle and shaved the bottom using a Ballistic Fabrication kit and added a pinion guard. Further getting him to his current 17 inches of ground clearance, he placed AxleTech portal boxes on each end of the axle. Inside he installed a Detroit Locker spinning 4.10 gears. Stopping power on the rear comes again from Wilwood disc brakes.

**5** Chris has gotten good service from the factory 3.3L V-6 engine, so has left it alone. Behind that sits a Nissan D22 manual transmission modified for lower gearing. The transfer case is a Nissan TX-10A unit with Calmini 3.92:1 low-range gearing. A yellow Optima under the hood is the primary battery; a second one mounted in



2



3



4

“What started years ago as a 2WD Frontier is now a portal-axle explorer”

## TECH SPECS

### 2001 NISSAN FRONTIER

#### >DRIVETRAIN

**ENGINE:** Stock 3.3L V-6

**TRANSMISSION:** Nissan D21 internals in D22 case, 4.05:1 first gear

**TRANSFER CASE:** Nissan TX-10A with Calmini 3.92:1 low-range

**FRONT AXLE:** High-pinion D60, ARB air locker, 4.10 gears, Reid Racing inner Cs, AxleTech portals, chromoly shafts, Wilwood disc brakes

**REAR AXLE:** Corporate 14-bolt, Detroit locker, 4.10 gears, AxleTech portals, pinion guard, Wilwood disc brakes

#### >SUSPENSION

**SPRINGS & SUCH:** 12-inch-travel ORI STX struts with 3-link (front); Alcan spring-under leaf packs, Revolver shackles, Fox 2.0 16-inch-travel air shocks, RuffStuff traction bar (rear)

**TIRES & WHEELS:** 37x12.50R17 Maxxis Trepador radials on 17x10 Stazworks double beadlocks

**STEERING:** Forward-facing 1978 F-150 box, crossover steering, AGR hydraulic assist ram and TC pump

**OTHER STUFF:** Custom bumpers and swingout tire carrier, ShrockWorks sliders and fuel tank skid, Warn 8274 (front) and M8000 (rear) winches upgraded with contactors, Hella lighting, rear-mounted battery, custom UHMW poly belly pan, custom 19-gallon auxiliary fuel tank, ARB air compressor and under-bed air tank

steering chores. Chris modified the rear spring hangers to accommodate spring-under Alcan leaf packs with Revolver shackles and Fox 2.0 air shocks. A modified RuffStuff track bar helps keep axle-wrap in check.

The factory V-6 engine powers the Frontier, but Chris swapped Nissan Pathfinder manual transmission internals into his Frontier housing to gain lower ratios for the first three gears. Further gear reduction comes from Calmini 3.92:1 low-range gearing in the transfer case. Speedometer correction was accomplished using a Dakota Digital SGI-5C to modify the vehicle speed sensor signal. To hold the rig in place when parked, Chris used a modified TSM disc brake at the transfer case. A custom 1350 yoke was built to accommodate the disc, and Chris fabricated custom bracketry to mount the caliper.

The goal was to build a competent rig that could tackle serious trails and travel highway distances between those trails. Loaded with extra fuel, onboard air, and other supplies, this truck is ready to tackle a wide range of East Coast trails. What started years ago as a 2WD Frontier is now a portal-axle explorer.



5



6

the bed provides backup power. A simple crossover tube was added in the engine compartment to tie the two front shock towers together.

**6** Chris opted to run 3-inch-lift Alcan leaf springs in the rear in a spring-under configuration. The addition of Revolver shackles allows the rear axle to really droop when combined with 16-inch-travel Fox 2.0 air shocks, and the shocks allow Chris to do some tuning for bed load by varying the nitrogen pressure a bit. Handy on long trips.



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## PRO COMP VAPOR WHEELS

The latest style from Pro Comp is the Series 84 Vapor. Initially available in a 17x9 size in five- and six-lug patterns, this wheel is targeted to Jeeps and other ½-ton applications. Each wheel has up to a 2,500-pound load capacity. Styling is simulated beadlock with a satin black finish warranted for two years. This wheel is built in the USA. **INFORMATION:** Pro Comp, 800.776.0767, procompusa.com.



## RIGID R-46 LIGHTS

The new R-Series 46 from Rigid is the company's first high-tech/high-output circular light. It combines adaptive cross-over with a curved lens, a curved housing, a compact design, and an advanced heat sink. Available beam patterns are Spot, Hyperspot, Flood, Combo, Driving, and Wide. A marine version of the R-Series 46 is also available. **INFORMATION:** Rigid Industries, 855.760.5337, rigidindustries.com.



## WILTON ATV VISE

At the jobsite or in the shop, the innovative Wilton ATV is a combination vise and sleeve that slides into a standard 2-inch receiver and becomes an instant workstation, without interfering with the tailgate. But that's not all. The included patented mounting bracket converts the ATV into a bench vise when attached to a workbench, trailer, or other stable work surface. **INFORMATION:** Wilton, 800.274.6848, wiltontools.com.



## SUMMIT RACING EQUIPMENT JUMP START AND POWER SUPPLY PACK

Summit's Professional Jump Start and Power Supply Pack has 300 cranking amps, powerful enough to jumpstart gasoline and diesel engines up to 4.8L. You can also use it to charge cellphones, tablets, speakers, and other portable USB devices. The 12-volt lithium-ion battery offers up to 1,000 full charging cycles. The pack also has an LED flash-light, a strobe light, and a 3-in-1 USB adapter, plus Apple's 30-pin and Lightning charging ends. A wall charger, a 12-volt DC charger, jumper cables, and a storage case are included. **INFORMATION:** Summit Racing Equipment, 800.230.3030, summitracing.com.



## GENY EASY HITCH

Geny's Gen-Y Hitch line currently has eight Class IV models and three Class V. All are designed with multiple stacked receivers that enable the three-ball mount to be easily adjusted for height and flipped for various tongues. Weight capacities range from 10,000 to 20,000 pounds. These hitches were developed with input from contractors to safely accommodate a variety of towing situations. The Gen-Y line is built in the USA. **INFORMATION:** Geny Industries, 574.518.0942, genyhitch.com.



## TRUCK SLED BED DECK

Truck Sled is a new sliding, folding truck bed accessory design to ease loading, unloading, and sectioning of pickup beds. Made from industrial ABS plastic, the sliding panels allow gear to be loaded and unloaded on the tailgate, then slid into the bed. The Truck Sled also doubles as a divider/cargo containment panel. The top side is coated with antiskid material. Each is made to order using measuring instructions contained on the Truck Sled website. **INFORMATION:** Truck Sled, trucksled.com.



## COVERCRAFT SUV CARGO LINERS

Covercraft now offers a custom-patterned selection of more than 225 custom-fit Cargo Area Liners in four popular colors. Made of urethane polyester fabric that's stain-resistant and waterproof, the covers are secured with tie-downs using the OEM D-rings for easy installation and removal for cleaning. Each Custom Cargo Area Liner also allows for function of the split back-seat function. Available colors are tan, taupe, gray, and black. **INFORMATION:** Covercraft, 405.238.9651, covercraft.com.



BY 4WOR staff



## CRAFTSMAN 263-PIECE MECHANICS TOOL SET

Featuring ratcheting wrenches, sockets, hex keys, extensions, and so much more, this Craftsman Tool Set is a great way to start wrenching on your rig. The range of sizes and tools in this kit gives you the freedom that you need to work faster and more efficiently at a price far less than buying individual tools. Alloyed steel construction provides guaranteed durability and includes Craftsman's lifetime warranty. **INFORMATION:** Craftsman, 800.349.4358, craftsman.com.



## QUADRATEC MAXIMUM DUTY JK LIFT

Quadratec now offers 2½- and 3½-inch suspension systems for 2007-2015 Wranglers. The shorter kit fits 34s and includes replacement coil springs, shocks, and relocation/extension brackets. The 3½-inch version (shown) is designed to clear 35s and adds longer coils and shocks, track bar brackets, and cam bolts. These kits are advertised as FMVSS 126 traction-control compliant. **INFORMATION:** Quadratec, 800.743.4927, quadratec.com.

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### BESTOP JK SUN BIKINI

This new bikini attaches above the driver and passenger seats and can remain in place whether the soft top is on or off the Jeep. Quick, no-drill attachment uses hook-and-loop fasteners and a J-hook system; it doesn't require use of windshield channel. Available fabrics are mesh or solid black diamond. **INFORMATION:** Bestop, 800.845.3567, bestop.com.



### METALCLOAK JK HARDLINE TUBE FENDERS

MetalCloak's bolt-on tube fender offerings now include Hardline tube models. Designed to replace the weak factory plastic fenders, the Hardline fenders come in aluminum or steel and are designed for easy installation and to provide tire coverage and clearance. Hardline tube fenders are available in raw metal or textured black powdercoat. **INFORMATION:** MetalCloak, 916.631.8071, metalcloak.com.

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## CHEVY TBI UPGRADES

**Q** First off, let me say I've been a subscriber with you guys when you were *Petersen's Pickup, Van and 4Wheel Drive* and Bill Sanders was your editor. Anyway, this is my first time to write in on anything. I have a 1995 K2500 pickup that I purchased brand new and as it sits in my carport it has 108,576 miles on it. Besides my Harley, it's my baby. I'm looking to upgrade the engine and have about a \$5,000-\$6,000 budget. I would like to retain the 4L80 trans and 241 transfer case. I know that my truck's 5.7L is rated at 190 hp and 300 lb-ft of torque, so anything would be additional power. Looking at the GM performance catalog, I guess this series of trucks are bastards (1987-1995)? I would like to get 250 to 300 hp and 350 to 400 lb-ft of torque. I like the simplicity of fuel injection. My three main priorities are reliability, reliability, and mileage. I'm wanting to make the power from low rpm to mid-range. Truck has 4.10 gears. I would like your input on where I should go. Thanks for the years of reading. You guys are the only truck/4-wheel publication I go to after doing *Four Wheeler* and *Off-Road* magazines plus whatever else is out there nowadays. Kudos!!

PAUL

Via [nuts@4wheeloffroad.com](mailto:nuts@4wheeloffroad.com)

**A** Thank you for being a loyal reader all these years. While Chevy trucks of the mid '90s are as reliable as a hammer, they don't exactly make gobs of power. I assume the truck is in good shape considering the relatively low miles and that you've owned it since new, so investing a little money on improving performance is wise.

According to my references, you are correct that your truck's small-block was rated from the factory at 190 hp and 300 lb-ft of torque, though the half-tons of the same year were rated slightly higher (210 hp) with the same torque. I'm going to base

my suggestions on the assumption that the engine runs just fine and doesn't have any issues, because 108,000 miles is nothing for a small-block of that era as long as it has been properly maintained.

As I see it, there are two ways you can go. You can do some modifications to the engine that's already there, or you can swap it for a mild performance crate engine. If you have the mechanical know-how and tools, there's no reason you couldn't reach your power goals with the current engine; modifying what you have will be less expensive but it will require some internal engine work. If you don't have the mechanical skills for internal engine work, then a crate engine might be the better choice.

Should you choose to stick with the engine you have, then I would recommend adding a good set of heads, a cam, an intake manifold, and headers. The stock camshaft profiles are very conservative, and the heads are notoriously restrictive. Replacing these with good-quality aftermarket heads and an RV camshaft will yield significant gains. Make sure you focus on a cam that improves horsepower and torque down low as opposed to a street-performance cam that improves power high in the rpm range. Combine heads and a cam with a good intake manifold and a quality set of headers, and you'll easily reach power levels in the range of 250 or more.

If camshaft and head specs get a little fuzzy for you, companies like Edelbrock ([edelbrock.com](http://edelbrock.com)) have engineered power packages with components that were all designed to work together. We've used several products from the company's Performer line in the past with great success on truck applications. The company even manufactures an intake manifold that your stock TBI system will bolt directly to, although you can also get adapters that will adapt standard or spread-bore carburetor mounts to your TBI (I would, however, recommend getting the proper intake manifold).

If that sounds like more work than you're willing to do or your truck's engine is wounded, then a crate engine is a great choice. There are all kinds of aftermarket crate engines out there, but it's hard to go wrong with one from GM Performance Parts ([chevrolet.com/performance](http://chevrolet.com/performance)). Built with all new parts and backed by an excellent warranty, crate engines from GMPP meet just about every need and desire. For you, the 350/290 HP Deluxe engine is just about perfect. It has a sturdy four-bolt main

block. All of your truck's engine accessories should bolt on. The only thing you will need is an adapter for bolting the throttle body to the intake manifold. The engine's price is actually well under your budget, leaving plenty of room for other upgrades. Right out of the box the Deluxe makes 100 more horsepower and 50 lb-ft of torque more than your stock engine, which is a major improvement.

One last thought as you contemplate your options: Keep in mind that the TBI system on your truck can only be built to support around 300 hp, which is one of the reasons why I suggested the 290hp Deluxe rather than GMPP's H.O. 350 or other more powerful options. Once you get above 300 hp, you'll need to transition to either a carburetor or aftermarket fuel injection. It doesn't get much more simple or reliable than the TBI system that's already on your truck, and since reliability is a major priority, I recommend keeping it. Once you make your modifications, I strongly recommend taking it to a shop and making sure the air/fuel ratios are where they are supposed to be.



## TUG TRUCK HEADLIGHTS

**Q** I have been reading about the Tug-Truck and its transformation into the Ultimate Adventure rig. I have loved reading your article but would like to know more about the headlights. I am restoring a 1987 Ram and would love to upgrade my headlights. Can you send me the information of the company you purchased these from?

TREY DAVIS

Via [nuts@4wheeloffroad.com](mailto:nuts@4wheeloffroad.com)

**A** The headlights on the Tug-Truck came from JW Speaker ([jwspeaker.com](http://jwspeaker.com)), a company that makes an impressive array of LED lighting solutions. The bulbs were drop-ins for the stock headlight buckets came from the company's Model 8900 Evolution Series. Editor Fred Williams reports that they work great, along with the rest of the company's lights that were used on the Tug-Truck build.



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## NUTS & BOLTS



### GAS OR HYDRAULIC?

**Q** I recently purchased new Wrangler Duratrac tires for my Silverado 2500HD 4x4. I also bought the best set of Monroe gas-filled shocks that my local parts retailer chain had. I am very happy with the quality of both products. Which is better, gas or hydraulic shocks? Every auto parts store has given me a different answer. This is my daily driver and camping vehicle as well. It spends most of its time in the Great Lakes region. I appreciate your time and enjoy the mag.

**RANGER**

*Via nuts@4wheeloffroad.com*

**A** For an everyday driver and weekend wheeler, either type of shock is just fine. In 95 percent of the driving conditions you will encounter, you would probably notice little, if any, difference if you had installed good-quality conventional hydraulic shocks on your truck instead of gas-filled ones. How a shock absorber works is more than we have the space to cover here, but there are some excellent articles about how shocks work available on our supersite, the Four Wheeler Network, such as this one: [fourwheeler.com/how-to/suspension-brakes/129-1001-off-road-shock-absorbers-101/](http://fourwheeler.com/how-to/suspension-brakes/129-1001-off-road-shock-absorbers-101/).

The only real difference between hydraulic shocks and gas shocks is that the latter has a pressurized gas charge inside of it (this is a bit of an oversimplification because there are several nuances among different shock manufacturers). Why? Friction is created as a shock piston moves through the hydraulic oil inside a shock body, and this friction creates heat. As the oil heats up, it has a tendency to aerate or foam, which is a fancy way of saying that air

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mixes with the oil. Air passes through the valves in the shock piston much faster than oil, which reduces the effectiveness of the shock to control suspension movement. This is referred to as shock fade. Pressurizing the fluid in the shock absorber reduces the tendency for the oil to foam, so a gas shock will perform better and longer in a really bumpy environment where the suspension has to work hard, such as when bombing down a fire road. But during everyday driving like taking the kids to school and going to the grocery store, how the shock is valved has more impact on ride quality than whether or not there's a pressurized gas charge in the shock cylinder.

All that said, there are some other advantages to gas shocks. Since they are more expensive to make and are usually sold as an upgrade over a conventional hydraulic shock, most shock manufacturers tend to spend more time making sure the shock valving is right for the application. They also often use better-quality materials inside the shock and exterior finishes that are more resistant to the elements. It is mostly because of these reasons and the resistance to shock fade that gas-charged shocks are often considered better than hydraulic. But that is not to say there aren't some excellent hydraulic shocks out there, including a few that allow you to adjust the valving externally for the terrain you encounter.

The bottom line? If you spend a lot of time at speed off the pavement, then gas-charged shocks have an advantage. But for a truck that spends most of its time on the street and slow-speed off-road situations, a quality set of hydraulics will work just as well and often cost a little less. 🍷

#### SUBMISSION INFORMATION

Confused? Email your questions about trucks, 4x4s, and off-roading tech using "Nuts, I'm confused" as the subject and include a picture (if it's applicable). Digital photos must measure no less than 1600 x 1200 pixels (or two megapixels) and be saved as a TIFF, an EPS, or a maximum-quality JPEG file. Also, I'll be checking the forums on our website (4wheeloffroad.com), and if I see a question that I think more of you might want to have answered, I'll print that as well. Otherwise drop it old-school style with the envelope addressed to the address below. Letters published in this magazine reflect the opinions of the writers, and we reserve the right to edit letters for clarity, brevity, or other purposes.

**WRITE TO:** Nuts & Bolts, 4-Wheel & Off-Road, 831 S. Douglas St., El Segundo, CA 90245 **FAX TO:** 818.566.8501 **EMAIL TO:** nuts@4wheeloffroad.com

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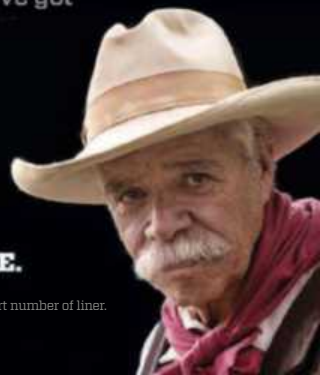


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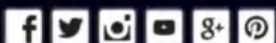




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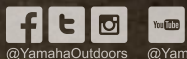
To see Wolverine in action scan:



## REAL WORLD TOUGH.™

For your nearest Pro Yamaha dealer and to learn more about the Wolverine, visit [YamahaWolverine.com](http://YamahaWolverine.com)

Professional drivers depicted on a closed course. Always protect the environment and wear your seat belt, helmet, eye protection and protective clothing. Read the owner's manual and product warning labels before operation. Model shown with Genuine Yamaha Accessories. ©2014 Yamaha Motor Corporation, U.S.A. All rights reserved.



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